



IN THE U.S. PATENT AND TRADEMARK OFFICE

In re U.S. Patent Application of:

SERIAL NO. : 09/893,143
APPLICANTS : Känsäkoski et al.
FILING DATE : June 27, 2001
ART UNIT : 2611
EXAMINER : Ettehadieh, Aslan

DOCKET NO. : 863.0018.U1(US)
CUSTOMER NO. : 29683

TITLE : SIGNAL STRENGTH ASSISTED SEARCHER AND ACQUISITION

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPELLANT'S APPEAL BRIEF

Sir:

Commensurate with the Notice of Appeal mailed on June 6, 2007 and filed on June 11, 2007, Applicant/Appellant hereby submits this Appeal Brief to the Board of Patent Appeals and Interferences (hereinafter, the Board) under 37 C.F.R. §41.31 and §41.37, and a draft for the \$500 appeal brief fee set forth in 37 C.F.R. §41.20(b)(2). A petition for a one-month extension of time and accompanying fee is submitted herewith. However, should the undersigned agent be mistaken, please consider this a petition for an extension of time under 37 C.F.R. §1.136(a) or (b) as may be required to avoid dismissal of this appeal, and charge Deposit Account No. 50-1924 for any required fee deficiency.

09/13/2007 FMETEKII 00000025 09893143
01 FC:1402 500.00 0P

09/13/2007 FMETEKII 00000072 09893143
01 FC:1402 500.00 0P

Valid date: 09/13/2007 FMETEKII 09893143
09/13/2007 FMETEKII 00000025 -500.00 0P
01 FC:1401

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

(1) REAL PARTY IN INTEREST

The real party in interest (RPI) is Nokia Corporation of Espoo, Finland, cited in an assignment of the US application recorded on October 19, 2001 at reel 012267, frame 0105.

(2) RELATED APPEALS AND INTERFERENCES

There are no other pending appeals or interferences of which the undersigned representative and assignee/RPI is aware that will directly affect, be directly affected by or have a bearing on the Board's decision in this appeal. See Section (10).

(3) STATUS OF CLAIMS

Claims 1-6, 8-12, 14-19, 21-24 and 26-33 stand finally rejected by a Final Office Action dated March 8, 2007. Claims 7, 13, 20 and 25 stand objected to as being dependent upon a rejected base claim by the Final Office Action. These claims are pending in this appeal, and are reproduced in an Appendix (Section 8) accompanying this Brief. A copy of the Final Office Action is attached hereto as Exhibit H for the Board's convenience (see Section (9)).

(4) STATUS OF AMENDMENTS

No amendment to the claims was proposed subsequent to the final rejection of the claims in the Final Office Action dated March 8, 2007.

(5) SUMMARY OF CLAIMED SUBJECT MATTER

References made below with respect to the instant application are made with respect to paragraphs of U.S. Patent Application Publication No. 2003/0002563 (referred to below as "the application publication"), the application publication that corresponds to the application at issue. A copy of this publication is attached hereto as Exhibit A (see Section (9)).

Claims 1, 9, 15, 16, 21, 26 and 30 are independent claims involved in this appeal. Claims 26 and 29 include means plus function elements, as described below.

Independent claim 1 recites a code division, multiple access (CDMA) receiver having: a RF section for receiving a CDMA signal (e.g., RF block 14 in FIG. 1, see para. [0020], [0022]), a circuit for determining an instantaneous total received power (Io) of the received CDMA signal (e.g., CDMA core unit 20 in FIG. 1, see para. [0020], [0022], [0026]), and a searcher (e.g., searcher 26 in FIG. 1, see para. [0020], [0022], [0026]). The searcher is one of enabled for operation or disabled from operation in accordance with the value of Io (see para. [0020], [0022], [0026], operations of claimed components generally correspond to the steps in the method shown in FIG. 2A). The circuit element recited in claim 1 all other elements or components recited in claim 1, singly or considered as a whole, are herein not considered to comprise one or means plus function elements.

Independent claim 9 recites a method for operating a code division, multiple access (CDMA) receiver. The method of claim 9 includes: receiving a CDMA signal (see para. [0020], [0022], e.g., performed by the RF block 14 in FIG. 1); determining an instantaneous total received power (Io) of the received CDMA signal (see para. [0020], [0022], e.g., performed by the CDMA core unit 20 in FIG. 1); and enabling or disabling a searcher for operation in accordance with the value of Io (see para. [0020], [0022], [0026], e.g., performed by the Io detector 24 in FIG. 1, method as shown in FIG. 2A).

Independent claim 15 recites a method for operating a code division, multiple access (CDMA) receiver. The method includes: receiving a CDMA signal (see para. [0020], [0022], e.g., performed by the RF block 14 in FIG. 1); storing samples of the received CDMA signal into a buffer (see para. [0022], [0026], [0028], e.g., storing samples in the Fast Searcher RAM (FSR) 26A in FIG. 1); determining an instantaneous total received power (Io) of the received CDMA signal over m consecutive segments of the received CDMA signal (see para. [0028], e.g.,

performed using the Io trigger from the Io detector 24 in FIG. 1); and using a maximum value of Io to identify one of m segments of the buffer on which a searcher is to be enabled for operation (see para. [0028], [0020], e.g., performed by a digital signal processor (DSP) 30 in FIG. 1).

Independent claim 16 recites a method for operating a code division, multiple access (CDMA) receiver. The method includes: receiving a CDMA signal and storing samples of the received CDMA signal into a buffer of a searcher while determining an instantaneous total received power (Io) of the received CDMA signal (see para. [0027], [0026], [0020], [0022], e.g., receiving performed by the RF block 14, storing samples in the Fast Searcher RAM (FSR) 26A, determining performed by the CDMA core unit 20, all of the identified exemplary components as shown in FIG. 1); and selectively one of generating or not generating a trigger signal to the searcher in accordance with the value of Io, wherein when generated the searcher trigger signal causes the searcher to process the stored samples (see para. [0027], [0026], [0020], [0022], e.g., Io trigger generated by the Io detector 24 and sent to the searcher 26, exemplary components as shown in FIG. 1, method as shown in FIG. 2B).

Independent claim 21 recites a code division, multiple access (CDMA) receiver, having: a receiver circuit for receiving a CDMA signal (e.g., RF block 14 in FIG. 1, see para. [0020], [0022]); a memory for storing samples of the received CDMA signal (e.g., Fast Searcher RAM (FSR) 26A in FIG. 1, see para. [0022], [0026]); and a signal processor circuit (e.g., digital signal processor (DSP) 30 in FIG. 1, see para. [0020]). The signal processor circuit (e.g., DSP 30) is for determining, during a time that the samples are being stored in said memory (e.g., FSR 26A), an instantaneous total received power (Io) of the received CDMA signal for selectively one of generating or not generating a searcher trigger signal (e.g., Io trigger shown in FIG. 1) in accordance with the value of Io (e.g., determining performed by the CDMA core unit 20 in FIG. 1, generating performed by Io detector 24 in FIG. 1, see para. [0020], [0022], [0026], [0027]). When generated, the searcher trigger signal causes the searcher (e.g., searcher 26 in FIG. 1) to process the stored samples (see para. [0027], [0026], [0022], operations of claimed components generally correspond to the steps in the method shown in FIG. 2B).

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

Independent claim 26 recites a radio frequency (RF) receiver, having: means for receiving a RF signal (RF block 14, antenna 12, receiver portion of a mobile terminal 10, FIG. 1, see para. [0020], [0022]); means for determining an instantaneous total received power (Io) of the received RF signal (CDMA core unit 20 in FIG. 1, see para. [0020], [0022]); and means for one of enabling a searcher means for operation or disabling the searcher means (searcher 26, digital signal processor (DSP) 30, see FIG. 1) from operation in accordance with the value of Io (Io detector 24, DSP 30, see para. [0020], [0022], [0026], operations of claimed components generally correspond to the steps in the method shown in FIG. 2A).

Dependent claim 29 recites a RF receiver as in claim 26, where the value of Io is determined over numbers of samples that are less than a total size of a searcher means (searcher 26, digital signal processor (DSP) 30, see FIG. 1, see para. [0028]) sample buffer means (Fast Searcher RAM (FSR) 26A in FIG. 1, see para. [0028]). The RF receiver further includes means to select samples (DSP 30 in FIG. 1, see para. [0020], [0028]) from only a portion of the sample buffer means (Fast Searcher RAM (FSR) 26A in FIG. 1) for use by the searcher means (searcher 26, digital signal processor (DSP) 30, see FIG. 1, see para. [0028]).

Independent claim 30 recites a method for operating a radio frequency (RF) receiver. The method includes: a step for receiving a RF signal (see para. [0020], [0022], e.g., performed by the RF block 14 in FIG. 1); a step for determining an instantaneous total received power (Io) of the received RF signal (see para. [0020], [0022], e.g., performed by the CDMA core unit 20 in FIG. 1); and a step for selectively one of enabling or disabling a searcher for operation in accordance with the value of Io (see para. [0020], [0022], [0026], e.g., performed by the Io detector 24 in FIG. 1, method as shown in FIG. 2A, see para. [0032] regarding a RF signal).

(6) GROUND OF REJECTION TO BE REVIEWED ON APPEAL

The ground for rejection presented for review by the Board is whether claims 1, 4, 5, 8, 9, 14-16,

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

19, 21, 24, 26, 29, 30 and 33 are rendered obvious under 35 U.S.C. §103(a) by Yun (U.S. Patent No. 6,463,295) in view of Kang et al. (U.S. Patent Publication No. 2002/0181632) in view of Ohno (U.S. Patent Publication No. 2001/0009562).

Please note that while dependent claims 2, 3, 6, 10-12, 17, 18, 22, 23, 27, 28, 31 and 32 are rejected as obvious under 35 U.S.C. §103(a) by Yun in view of Kang et al. in view of Ohno and further in view of Chung et al. (U.S. Patent No. 5,642,377), no additional argument is presented for these claims. That is, these dependent claims stand or fall together with their respective independent claims, as expressed immediately below and as argued further below. Furthermore, since this ground for rejection is not argued separately, a copy of Chung et al. is not provided herewith.

Claims 1-3, 5-7, 9-13, 16-28 and 30-32 stand or fall together (see Section (7)(A)). Claim 15 stands or falls on its own (see Section (7)(B)). Claim 4 stands or falls on its own (see Section (7)(C)). Claims 8, 14, 29 and 33 stand or fall together (see Section (7)(D)).

Note that claims 7, 13, 20 and 25 are objected to as depending on a rejected base claim. Notwithstanding this objection, these claims are included as standing or falling with their respective independent claims, as indicated above and argued below. The Applicant/Appellant reserves the right to amend one or more of these claims to be one or more independent claims incorporating the subject matter of the corresponding base claim(s).

(7) ARGUMENT

References made below with respect to the instant application are made with respect to paragraphs of U.S. Patent Application Publication No. 2003/0002563 (referred to below as "the application publication"), the application publication that corresponds to the application at issue. A copy of this publication is attached hereto as Exhibit A (see Section (9)).

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

(A) CLAIMS 1-3, 5-7, 9-13, 16-28, 30-32

Of claims 1-3, 5-7, 9-13, 16-28 and 30-32, claims 1, 9, 16, 21, 26 and 30 are independent claims. Claim 1 is representative of these independent claims and is discussed below. Claims 2, 3 and 5-7 depend, directly or indirectly, from independent claim 1. Claims 10-13 depend from independent claim 9. Claims 17-20 depend from independent claim 16. Claims 22-25 depend from independent claim 21. Claims 27 and 28 depend, directly or indirectly, from independent claim 26. Claims 31 and 32 depend, directly or indirectly, from independent claim 30.

Independent claim 1 recites a code division, multiple access (CDMA) receiver having: a RF section for receiving a CDMA signal; a circuit for determining an instantaneous total received power (I_o) of the received CDMA signal; and a searcher that is one of enabled for operation or disabled from operation in accordance with the value of I_o .

The Examiner rejected claim 1 under 35 U.S.C. §103(a) as being obvious over Yun (Exhibit B) in view of Kang et al. (Exhibit C) in view of Ohno (Exhibit D). See Section (6) above and Section (7)(A) below.

(A)(i) OBVIOUSNESS REJECTIONS & THE GRAHAM FACTORS

While the Board is undoubtedly familiar with the applicable rules and analyses, the below discussion of obviousness is presented merely as a background for consideration of the §103(a) rejections of the claims, as further discussed in subsequent sections. In addition, the below discussion is included to identify and consider recent case law that may prove useful when considering the arguments presented herein.

35 U.S.C. §103(a) states:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

With regards to §103, the MPEP provides guidance in MPEP §2141-2146. In this case, MPEP §§2141, 2141.01(a), 2141.02 and 2141.03 are particularly germane.

MPEP §2141 states:

Patent examiners carry the responsibility of making sure that the standard of patentability enunciated by the Supreme Court and by the Congress is applied in each and every case. The Supreme Court in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966), stated:

Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquires may have relevancy. . .

...

Office policy is to follow *Graham v. John Deere Co.* in the consideration and determination of obviousness under 35 U.S.C. 103. As quoted above, the four factual inquires enunciated therein as a background for determining obviousness are as follows:

- (A) Determining the scope and contents of the prior art;
- (B) Ascertaining the differences between the prior art and the claims in issue;
- (C) Resolving the level of ordinary skill in the pertinent art; and
- (D) Evaluating evidence of secondary considerations.

MPEP §2141.01(a) discusses "Analogous and Nonanalogous Art," stating:

The examiner must determine what is "analogous prior art" for the purpose of analyzing the obviousness of the subject matter at issue. **"In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned."** *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). See also *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992) ("A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem."); *Wang Laboratories Inc. v. Toshiba Corp.*, 993 F.2d 858, 26 USPQ2d 1767 (Fed. Cir. 1993); and *State Contracting & Eng'g Corp. v. Condotte America, Inc.*, 346 F.3d 1057, 1069, 68 USPQ2d 1481, 1490 (Fed. Cir. 2003) (where the general scope of a reference is outside the pertinent field of endeavor, the reference may be considered analogous art if subject matter disclosed therein is relevant to the particular problem with which the inventor is involved). (emphasis added)

...

While Patent Office classification of references and the cross-references in the official search notes of the class definitions are some evidence of "nonanalogy" or "analogy" respectively, the court has found "the similarities and differences in structure and function of the inventions to carry far greater weight." *In re Ellis*, 476 F.2d 1370, 1372, 177 USPQ 526, 527 (CCPA 1973) [].

...

V. ANALOGY IN THE ELECTRICAL ARTS

See, for example, *Wang Laboratories, Inc. v. Toshiba Corp.*, 993 F.2d 858, 26 USPQ2d 1767 (Fed. Cir. 1993) (Patent claims were directed to single in-line memory modules (SIMMs) for installation on a printed circuit motherboard for use in personal computers. Reference to a SIMM for an industrial controller was not necessarily in the same field of endeavor as the claimed subject matter merely because it related to memories. Reference was found to be in a different field of endeavor because it involved memory circuits in which modules of varying sizes may be added or replaced, whereas the claimed invention involved compact modular memories. Furthermore, since memory modules of the claims at issue were intended for personal computers and used dynamic random-access-memories, whereas reference SIMM was developed for use in large industrial machine controllers and only taught the use of static random-access-memories or

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

read-only-memories, the finding that the reference was nonanalogous was supported by substantial evidence.); *Medtronic, Inc. v. Cardiac Pacemakers*, 721 F.2d 1563, 220 USPQ 97 (Fed. Cir. 1983) (Patent claims were drawn to a cardiac pacemaker which comprised, among other components, a runaway inhibitor means for preventing a pacemaker malfunction from causing pulses to be applied at too high a frequency rate. Two references disclosed circuits used in high power, high frequency devices which inhibited the runaway of pulses from a pulse source. The court held that one of ordinary skill in the pacemaker designer art faced with a rate-limiting problem would look to the solutions of others faced with rate limiting problems, and therefore the references were in an analogous art.). (emphasis added)

Note that the two examples discussed above with regards to "Analogy in the Electrical Arts" both consider whether the reference was reasonably pertinent to the particular problem with which the inventor was concerned. It is also noted that this consideration is not solely dispositive, as discussed below in *KSR v. Teleflex*.

MPEP §2141.02(I) considers "Differences Between Prior Art and Claimed Invention," stating:

In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983) (Claims were directed to a vibratory testing machine (a hard-bearing wheel balancer) comprising a holding structure, a base structure, and a supporting means which form "a single integral and gaplessly continuous piece." Nortron argued the invention is just making integral what had been made in four bolted pieces, improperly limiting the focus to a structural difference from the prior art and failing to consider the invention as a whole. The prior art perceived a need for mechanisms to dampen resonance, whereas the inventor eliminated the need for dampening via the one-piece gapless support structure. "Because that insight was contrary to the understandings and expectations of the art, the structure effectuating it would not have been obvious to those skilled in the art." 713 F.2d at 785, 218 USPQ at 700 (citations omitted).).

MPEP §2141.02(II) further states: "Distilling an invention down to the 'gist' or 'thrust' of an invention disregards the requirement of analyzing the subject matter 'as a whole.' *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied,

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

469 U.S. 851 (1984) [.]."

MPEP §2141.03 considers "Level of Ordinary Skill in the Art," stating:

"Factors that may be considered in determining level of ordinary skill in the art include (1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field." *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696, 218 USPQ 865, 868 (Fed. Cir. 1983), cert. denied, 464 U.S. 1043 (1984).

...

"The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry." *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718, 21 USPQ2d 1053, 1057 (Fed. Cir. 1991). The examiner must ascertain what would have been obvious to one of ordinary skill in the art at the time the invention was made, and not to the inventor, a judge, a layman, those skilled in remote arts, or to geniuses in the art at hand. *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 218 USPQ 865 (Fed. Cir. 1983), cert. denied, 464 U.S. 1043 (1984).

The Supreme Court recently handed down a decision that directly addresses §103 obviousness analysis, *KSR International Co. v. Teleflex Inc., et. al.*, 550 U.S. ___, 127 S. Ct. 1727 (2007). A copy of the Syllabus and Opinion of the Court for *KSR v. Teleflex* is attached hereto as Exhibit E (see Section (9)).

On pages 11-12 and 13 of the attached *KSR v. Teleflex* opinion (Exhibit E), the court states:

Neither the enactment of §103 nor the analysis in *Graham* disturbed this Court's earlier instructions concerning the need for caution in granting a patent based on the combination of elements found in the prior art. For over a half century, the Court has held that a "patent for a combination which only unites old elements with no change in their respective functions . . . obviously withdraws what is already known into the field of its monopoly and diminishes the resources available to skillful men." *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*, 340 U. S. 147, 152 (1950). This is a principal reason for declining to allow patents for what is obvious. The combination of familiar

elements according to known methods is likely to be obvious when it does no more than yield predictable results.

...

Finally, in *Sakraida v. AG Pro, Inc.*, 425 U. S. 273 (1976), the Court derived from the precedents the conclusion that when a patent "simply arranges old elements with each performing the same function it had been known to perform" and yields no more than one would expect from such an arrangement, the combination is obvious. *Id.*, at 282.

The principles underlying these cases are instructive when the question is whether a patent claiming the combination of elements of prior art is obvious. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. **If a person of ordinary skill can implement a predictable variation, §103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.** *Sakraida* and *Anderson's-Black Rock* are illustrative—a court must ask whether **the improvement is more than the predictable use of prior art elements according to their established functions.** (emphasis added)

Thus, where old elements are arranged with each performing the same function as known in the art and the combination yields results one would expect from the combination, the combination may be considered obvious. The court appears to stress that the combination *and* results should be "predictable."

On pages 14-15 of the attached *KSR v. Teleflex* opinion, the court states:

As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

...

As is clear from cases such as *Adams*, a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was,

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.

...

Helpful insights, however, need not become rigid and mandatory formulas; and when it is so applied, the TSM test is incompatible with our precedents. The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents. The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way. In many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends. Granting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, in the case of patents combining previously known elements, deprive prior inventions of their value or utility.

Here, the court briefly recognizes the teaching/suggestion/motivation (TSM) test that previously dominated. The court goes on to explain that obviousness analysis should not be limited to rigid application of the TSM test.

On pages 16-17 of the attached *KSR v. Teleflex* opinion, the court states:

In determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls. **What matters is the objective reach of the claim. If the claim extends to what is obvious, it is invalid under §103.** One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims.

The first error of the Court of Appeals in this case was to foreclose this reasoning by holding that courts and patent examiners should look only to the problem the patentee was trying to solve. 119 Fed. Appx., at 288. The Court of Appeals failed to recognize that the problem motivating the patentee may be only one of many addressed by the patent's subject matter. **The question is not whether the**

combination was obvious to the patentee but whether the combination was obvious to a person with ordinary skill in the art. Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.

The second error of the Court of Appeals lay in its assumption that a person of ordinary skill attempting to solve a problem will be led only to those elements of prior art designed to solve the same problem. *Ibid.* The primary purpose of Asano was solving the constant ratio problem; so, the court concluded, an inventor considering how to put a sensor on an adjustable pedal would have no reason to consider putting it on the Asano pedal. *Ibid.* Common sense teaches, however, that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle. Regardless of Asano's primary purpose, the design provided an obvious example of an adjustable pedal with a fixed pivot point; and the prior art was replete with patents indicating that a fixed pivot point was an ideal mount for a sensor. The idea that a designer hoping to make an adjustable electronic pedal would ignore Asano because Asano was designed to solve the constant ratio problem makes little sense. **A person of ordinary skill is also a person of ordinary creativity, not an automaton.**

The same constricted analysis led the Court of Appeals to conclude, in error, that a patent claim cannot be proved obvious merely by showing that the combination of elements was "obvious to try." *Id.*, at 289 (internal quotation marks omitted). When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under §103.

The Court of Appeals, finally, drew the wrong conclusion from the risk of courts and patent examiners falling prey to hindsight bias. **A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning.** See *Graham*, 383 U. S., at 36 (warning against a "temptation to read into the prior art the teachings of the invention in issue" and instructing courts to "'guard against slipping into the use of hindsight'" (quoting *Monroe Auto Equipment Co. v. Heckethorn Mfg. & Supply Co.*, 332 F. 2d 406, 412 (CA6 1964))). **Rigid preventative rules that deny factfinders recourse to common sense, however, are neither necessary under our case law nor consistent with it.** (emphasis added)

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

Based on the above quotations, the *KSR v. Teleflex* opinion may be seen as a movement away from the formerly-dominant TSM test and back to a more flexible application of the Graham factors. The Examiner should consider whether the combination was obvious to a person with ordinary skill in the art in view of any need or problem known in the field of endeavor at the time of invention and addressed by the patent (i.e., the applicant or patentee). The Examiner should also consider that a person of ordinary skill is also a person of ordinary creativity.

Furthermore, and particularly in view of the aforementioned, the Examiner should be mindful of the potential for hindsight bias and be wary of the temptation to read into the prior art the teachings of the invention at issue. The Examiner should not apply the specified guidelines and analysis in a vacuum, but rather, where applicable, in light of common sense.

In two decisions handed down after *KSR v. Teleflex*, the Court of Appeals for the Federal Circuit (CAFC) provides further guidance for obviousness analyses: *Leapfrog Enterprises, Inc. v. Fisher-Price, Inc. et al.*, No. 06-1402 (Fed.Cir. May 9, 2007) and *In re Icon Health and Fitness, Inc.*, No. 06-1573 (Fed.Cir. Aug. 1, 2007), attached hereto as Exhibits F and G, respectively (see Section (9)).

On pages 6-8 of *Leapfrog v. Fisher-Price*, the court states:

Leapfrog argues that the district court engaged in improper hindsight in reaching its conclusion of obviousness by concluding that all of the limitations of the claim are found in the prior art. Leapfrog also argues that the court's finding that the Bevan device has the same functionality as claim 25 was clearly erroneous because the components of Bevan's device are mechanical, and thus different in structure and interrelation from the electronic components described in claim 25, and therefore cannot provide the same functionality. Leapfrog argues that there was inadequate evidence in the record to support a motivation to combine Bevan, the Texas Instruments SSR, and a reader to arrive at the invention of claim 25. Finally, Leapfrog argues that the district court did not properly consider the strong evidence of secondary considerations of nonobviousness.

In response, Fisher-Price argues that claim 25 is nothing more than the Bevan device, a toy that teaches reading based on the association of letters with their

phonemic sounds, updated with modern electronics that were common by the time of the alleged invention. Fisher-Price also responds that particularized and specific motivations to combine need not be found in the prior art references themselves in the context of an improvement that arises from a desire to generally improve a known device (*e.g.*, to make the product smaller, lighter, or less expensive) using newer technology. Finally, Fisher-Price argues that the district court did give proper consideration to secondary considerations of nonobviousness, but simply concluded that those considerations were not sufficient to overcome the determination of obviousness based on primary considerations.

...

Thus, we bear in mind that the goal of the claim 25 device was to allow a child to press a switch associated with a single letter in a word and hear the sound of the letter as it is used in that word. In this way, the child would both associate the sound of the letter with the letter itself and be able to sound out the word one letter at a time to learn to read phonetically. **Accommodating a prior art mechanical device that accomplishes that goal to modern electronics would have been reasonably obvious to one of ordinary skill in designing children's learning devices. Applying modern electronics to older mechanical devices has been commonplace in recent years.**

The Bevan patent was one of the pieces of prior art relied upon by the district court, and it describes an electro-mechanical learning toy. In the preferred embodiment of the Bevan device, a housing contains a phonograph record as a voice storage means, a speaker for playing sounds from the voice storage means, and an actuated electric motor to turn the record. Uniquely shaped puzzle pieces fit into correspondingly shaped openings in the top of the housing. Depressing the puzzle pieces in the openings causes the motor to turn the record and brings phonographic needles into contact with the portions of the record where the sounds associated with the puzzle pieces are stored so that they can be played through the speaker. In one embodiment, each puzzle piece is imprinted with one letter from a word, and pressing each puzzle piece produces the sound of a single letter in that word. **Thus, although it relies on an electric motor and mechanical structures rather than a processor and related electronics, Bevan teaches an apparatus that achieves the goals described above of associating letters with their sounds and encouraging children to sound out words phonetically through a similar type of interaction. We therefore see no clear error in the district court's finding that the Bevan device has the same method of operation, viewed as a whole, as claim 25 of Leapfrog's '861 patent.**

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

In this case, the court determined that it would be obvious to one of ordinary skill in designing children's learning devices to apply modern electronics to older mechanical devices.

On pages 7-9 of *In re Icon Health*, the court states:

Icon disputes the Board's conclusion that one skilled in the art would have found it obvious to combine the teachings of Teague and Damark. As the first of its two major arguments on appeal, Icon argues that Teague falls outside the "treadmill art" and addresses a different problem than the present application, removing it from the relevant prior art. We agree that, describing a folding bed, Teague comes from a different field than Icon's application. We disagree, however, that Teague addresses a different problem.

If reasonably pertinent to the problem addressed by Icon, Teague may serve as analogous art. *Paulsen*, 30 F.3d at 1481. "**A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem.**" *In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992). In other words, "familiar items may have obvious uses beyond their primary purposes." *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1742 (2007). We therefore have concluded, for example, that an inventor considering a hinge and latch mechanism for portable computers would naturally look to references employing other "housings, hinges, latches, springs, etc.,," which in that case came from areas such as "a desktop telephone directory, a piano lid, a kitchen cabinet, a washing machine cabinet, a wooden furniture cabinet, or a two-part housing for storing audio cassettes." *Paulsen*, 30 F.3d at 1481–82.

Icon's invention provides a treadmill with a folding mechanism and a means for retaining that mechanism in the folded position. The application specifically discusses the gas spring as part of a "lift assistance assembly . . . to apply a force or torque urging the tread base" towards the closed position. '624 patent, col. 15, ll. 3–5. Nothing about Icon's folding mechanism requires any particular focus on treadmills; it generally addresses problems of supporting the weight of such a mechanism and providing a stable resting position. Analogous art to Icon's application, when considering the folding mechanism and gas spring limitation, may come from any area describing hinges, springs, latches, counterweights, or other similar mechanisms—such as the folding bed in Teague. Accordingly, we conclude that substantial evidence supports the Board's finding that Teague provides analogous art.

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

Several factors support the Board's conclusion of obviousness. When analyzing Icon's application, we consider a variety of sources that may have led one skilled in the art to combine the teachings of Damark and Teague. Indeed, "**any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.**" *KSR*, 127 S. Ct. at 1742.

...

Next, Icon's application discusses the gas spring in connection with a "lift assistance assembly." '624 patent, col. 15, ll. 3–25. Similarly, Teague is directed at a "counterbalancing mechanism," intended to support the weight of a bed as it opens and closes. Teague, col. 1, ll. 5–34. **One skilled in the art would naturally look to prior art addressing the same problem as the invention at hand, and in this case would find an appropriate solution.** Indeed, while perhaps not dispositive of the issue, **the finding that Teague, by addressing a similar problem, provides analogous art to Icon's application goes a long way towards demonstrating a reason to combine the two references.** Because Icon's broad claims read on embodiments addressing that problem as described by Teague, the prior art here indicates a reason to incorporate its teachings. (emphasis added)

In this case, the determination that the reference (Teague) addresses the same problem as the patent application (Icon's application) was a strong factor supporting the finding that the reference provides analogous art.

(A)(ii) CONVENTIONAL DEVICES

In a spread spectrum system of interest to these teachings, a pilot channel signal is transmitted from a base station or base site for reception by mobile terminals within an area served by the base station. **The received pilot signal is used by the mobile terminal in a searcher function for synchronization and system acquisition purposes**, for allocating despreaders or correlators, as well as for mobile station demodulation processing of the data bearing channels. However, the pilot signal suffers from the same radio channel fading processes as does the normally transmitted signal. Due to the fading processes, the signal to noise ratio (SNR) of the received

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

pilot signal varies as a function of time and, as a result, the use of the pilot signal for its intended purposes can be impaired. See the application publication at para. [0002].

The searcher is generally used for synchronization acquisition and channel set maintenance. The synchronization acquisition procedure is intended to synchronize a local pseudo-noise (PN) generator to CDMA system time. During the set maintenance procedure, the searcher identifies the multipath profile of the channel and calculates the pilot channel energy per chip to total received power spectral density ratio (E_c/I_o). See the application publication at para. [0003].

A problem arises in this regard, as the searcher sample size may be, for example, 2048 chips (single dwell) or more. In this case it can be shown that several seconds may be required to compute all of the correlations and, thus, **the acquisition time can be dominated by the correlation calculations.** See the application publication at para. [0004].

In accordance with a conventional searcher operational procedure, a data processor of the mobile terminal may use the power measurement capabilities of an automatic gain control (AGC) block in order to determine if data stored into searcher memory (also referred to as a buffer) is subject to any fading (or other adverse) channel conditions. However, **there are problems with this approach, as the response time and other characteristics of the AGC may not be optimum for use by the searcher function.** See the application publication at para. [0005].

(A)(iii) CLAIM 1 AND EXEMPLARY EMBODIMENTS OF THE INVENTION

As noted above, claim 1 recites a code division, multiple access (CDMA) receiver having: a RF section for receiving a CDMA signal; a circuit for determining an instantaneous total received power (I_o) of the received CDMA signal; and a searcher that is one of enabled for operation or disabled from operation in accordance with the value of I_o . See pending claim 1.

These teachings use instantaneous power measurement information (I_o), as opposed to

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

measured Received Signal Strength Indicator (RSSI) information from an AGC block, to optimize the searcher data acquisition operation. In the searcher data acquisition algorithm (as well as during set maintenance), the instantaneous measured Io and an appropriate time window are used as a trigger in the searcher operations. See the application publication at para. [0019].

In FIG. 1, the time constant of the RX_AGC block 22 is set so as to allow compensation of slow fading, but not fast fading. However, **the inventors have realized that the symbol power (SymPower) output from the CDMA core 20 to the RX_AGC block 22 can provide nearly instantaneous channel information for a communication channel that is in a rapid fade, i.e., one that would not normally be compensated for by the AGC block 22 gain control signal.** In this case, Io can be used, in one embodiment, to trigger the loading of data into a Fast Searcher RAM (FSR) 26A, associated with the searcher (correlator) 26, **in order to improve the performance of the acquisition and set maintenance operations.** See the application publication at para. [0022].

In general, it is desirable to reduce the delay due to repetitions of the trigger generation algorithm versus fading. **A small delay, leading to an improved acquisition time, and depending on vehicle speed, can lead to greatly improved performance, when measured in terms of detection probability.** See the application publication at para. [0024].

In one non-limiting, exemplary embodiment, eight SymPower samples (0.42 ms) are accumulated by the Io detector 24 in order to obtain Io, and **the maximum Io monitoring time can be less than about 10 milliseconds. In this case the acquisition time, resulting from the use of these teachings, can become shortened to the point that it may be ignored.** See the application publication at para. [0019].

The performance of the searcher 26 using the Io trigger and timing window has been found to be improved at all vehicle speeds (e.g., 3 km/h, 30 km/h, and 100 km/h). See the application publication at para. [0030].

Thus, in accordance with the exemplary embodiments of the invention, by enabling or disabling a searcher in accordance with a determined instantaneous total received power (Io) of the received CDMA signal, improvements in acquisition time and acquisition probability can be realized. Use of the exemplary embodiments of the invention provides improvements in searcher performance and, thus, improvements in set maintenance, finger allocation and forward link quality (FER).

It is submitted that the field of endeavor with which the instant application is concerned relates specifically to searchers and searcher operations. This is apparent not only from the Specification but also from the title, the Technical Field (paragraph [0001]) and the claims. Claim 1 recites "A [CDMA] receiver having: ...a searcher that is one of enabled for operation or disabled from operation in accordance with the value of Io." Thus, claim 1 only claims a CDMA receiver with a searcher. The searcher is an integral part of the invention recited in claim 1.

It is respectfully submitted that, based on the above-identified field of endeavor for the instant application and the subject matter recited in the pending claims, such as that identified immediately above in claim 1, **any prior art that does not relate to searcher operation or include a searcher is not from a same field of endeavor.**

As quoted above, MPEP §2141.01(a) states: "In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." MPEP §2141.01(a) also states: "A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem. ...[W]here the general scope of a reference is outside the pertinent field of endeavor, the reference may be considered analogous art if subject matter disclosed therein is relevant to the particular problem with which the inventor is involved "

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

The prior art searchers discussed above are sub-optimal. The problem confronted by the instant application is how to optimize searching and searcher operation (e.g., signal acquisition, set maintenance). Exemplary embodiments of the invention provide significant improvements over prior art searchers. While exemplary embodiments of the invention utilize instantaneous power measurement information (Io), this information (Io) is utilized within the context of searching. Thus, any prior art that does not relate to searcher operation or include a searcher is from a non-analogous field of endeavor.

(A)(iv) THE §103(a) REJECTION OF CLAIM 1

The Examiner rejected claim 1 under 35 U.S.C. §103(a) as being obvious over Yun in view of Kang et al. in view of Ohno (see the Final Office Action, Exhibit H, at pp. 6-7):

Regarding claim 1, Yun discloses a code division, multiple access (CDMA) receiver, comprising: an RF section for receiving a CDMA signal (figure 5, col. 1 lines 15 – 41, col. 2 lines 23 – 24); a circuit for determining an instantaneous total received power (Io) of the received CDMA signal (col. 12 lines 42 – 48, col. 38 lines 1 – 10, 44 – 51, col. 39 lines 50 – 60). Yun does not disclose a searcher that is one of enabled for operation or disabled from operation in accordance with a value.

In the same field of endeavor, however, Kang discloses a searcher that is one of enabled for operation or disabled from operation (paragraphs 13, 39, 40). Kang also shows an RF section for receiving a CDMA signal (paragraph 4) and a circuit for determining a total received power of the received CDMA signal (figure 2 elements 32 – 34, paragraph 10). Also, Kang does not explicitly specify instantaneous however the total received power (Io) would be the energy result of I^2+Q^2 .

Therefore it would have been obvious to one skilled in the art at the time of invention was made [*sic*] to use a searcher that is one of enabled for operation

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

or disabled from operation as taught by Kang in the system of Yun to allow the system to perform efficiently and to avoid unnecessary operations (paragraph 13).

In the same field of endeavor, however, Ohno discloses a searcher that is one of enabled for operation or disabled for operation in accordance with a value (paragraphs 44 – 45, 54, figures 3, 7; where the signal c is being interrupted [*sic*] as a value).

Therefore it would have been obvious to one skilled in the art at the time of invention was made [*sic*] to use a searcher that is one of enabled for operation or disabled from operation in accordance with a value as taught by Ohno in the system of Yun to reduce power consumption in a receiver (paragraph 15).

The three references in question, Yun, Kang et al. and Ohno, are reviewed separately below before the alleged combination is considered.

(A)(v) REFERENCE 1: YUN (EXHIBIT B)

Yun is concerned with a method for ongoing power control (see Abstract, col. 1, lines 14-49) and "a method and apparatus for estimating received signal quality (as expressed by [SINR]) for use in the power control method and for other applications" (see col. 5, lines 30-41).

The Examiner admits that: "Yun does not disclose a searcher that is one of enabled for operation or disabled from operation in accordance with a value." In fact, Yun does not even consider or discuss any potential applications for signal acquisition, searcher operation or searchers.

In contrast, the instant application uses "instantaneous power measurement information (Io)... to optimize the searcher data acquisition operation." Para. [0019]. See also para. [0001], [0024] and [0030]. Clearly Yun cannot be seen to render obvious aspects of the applicants' claimed invention since the instant application, and the claims thereof, relate to searchers and the operation thereof. Contrary to the Examiner's assertion, Yun is from a non-analogous field of

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

endeavor.

It is submitted that Yun is not in the field of applicant's endeavor or, in the alternative, Yun is not reasonably pertinent to the particular problem with which the inventor was concerned. Because of the matter with which it deals, Yun is not a reference which logically would have commended itself to an inventor's attention in considering the identified problem (improving searcher performance). Furthermore, if one agrees that the general scope of Yun is outside the pertinent field of endeavor, Yun should not be considered analogous art because subject matter disclosed therein is not relevant to the particular problem with which the inventor is involved. If one considers the similarities and differences in structure and function between Yun and the instant application, it is clear that Yun comprises non-analogous art. See MPEP §2141.01(a).

(A)(vi) REFERENCE 2: KANG ET AL. (EXHIBIT C)

In contrast to Yun, Kang et al. *is* concerned with searchers and searcher operation. More specifically, Kang et al. disclose:

A searcher according to one embodiment of the invention allows operations such as acquisition and tracking of time-division multiplexed synchronization sequences to be performed efficiently by selectively enabling and disabling a searcher clock signal. A searcher according to another embodiment of the invention allows unnecessary retrieval operations to be avoided by not retrieving received samples from storage that do not correspond to a search hypothesis to be tested. Further implementations of such searchers also allow multiple hypotheses to be tested on a single sample vector and/or allow hypotheses relating to multiple code signals to be tested contemporaneously.

See para. [0013].

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

While the searchers according to Kang et al. may be selectively enabled and disabled, the searchers are enabled or disabled in accordance with "a searcher clock signal." See para. [0013], [0024]-[0025] and claim 6 of Kang et al. As Kang et al. describe in paragraph [0039], the searcher is disabled after the last hypothesis for half-slot n has been loaded until it is time to begin loading the first vector for the first hypothesis of half-slot n+1. Kang et al. assert that this operation achieves power savings by disabling the searcher clock signal between synchronization signal bursts. See para. [0040]. Thus, the above-noted disclosure of Kang et al. is within the context of power savings and does not provide actual improvement in searcher operations or searcher performance.

Kang et al. do not disclose or suggest "A [CDMA] receiver having: ...a searcher that is one of enabled for operation or disabled from operation in accordance with the value of Io," as recited in claim 1, nor does the Examiner argue otherwise.

In the Final Office Action, the Examiner asserts that Kang et al. discloses "a circuit for determining a total received power of the received CDMA signal (figure 2 elements 32 – 34, paragraph 10)." However, the Examiner also admits that "Kang does not explicitly specify instantaneous however the total received power (Io) would be the energy result of I^2+Q^2 ." Thus, Kang et al. do not disclose or suggest utilizing "instantaneous total received power (Io)" as recited in claim 1.

In paragraph [0010], Kang et al. discuss this portion of FIG. 2. The identified elements are used in a conventional manner for testing purposes (i.e., during signal acquisition). Kang et al. do not disclose or suggest "a searcher that is one of enabled for operation or disabled from operation in accordance with the value of Io," as recited in claim 1, nor does the Examiner argue otherwise.

(A)(vii) REFERENCE 3: OHNO (EXHIBIT D)

Ohno discloses:

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

According to an aspect of this invention, a CDMA receiver comprises a searcher for preparing a delay profile in received CDMA signals that indicates a plurality of radio propagation paths to produce path information identifying main propagation paths. The CDMA receiver comprises path monitoring means for monitoring the path information from the searcher to produce a detection signal when the main propagation paths are stable for a predetermined time interval and searcher operation controlling means for controlling, in response to the detection signal, the searcher to make the searcher intermittently operate at a predetermined intermittent period.

See para. [0017], see also para. [0030].

The motivation behind Ohno's CDMA receiver is further described in paragraphs [0015] and [0016]:

It is an object of this invention to provide a CDMA receiver which is capable of reducing power consumption in a searcher.

It is another object of this invention to provide a power consumption reducing method which is capable of reducing power consumption in a searcher.

Thus, Ohno discloses a CDMA receiver having a searcher that is intermittently operable based on the stability of a multipath for a predetermined time interval, said operation for the purposes of reducing power consumption in the searcher.

In the Final Office Action, the Examiner asserts that the detection/instruction signal c of Ohno described in paragraphs [0044], [0045] and [0054] may be interpreted as a value and, thus, that "Ohno discloses a searcher that is one of enabled for operation or disabled from operation in

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

accordance with a value."

While the applicant disputes the Examiner's interpretation of the detection/instruction signal c as "a value" (see immediately below), it is clear that Ohno does not disclose or suggest "a searcher that is one of enabled for operation or disabled from operation in accordance with the value of Io," as recited in claim 1, nor does the Examiner argue otherwise.

It is submitted that the detection/instruction signal c of Ohno is not a value. Rather, "c" is "a detection signal or an instruction signal... for instructing alteration of an operating period of the searcher." Para. [0044]. As such, Ohno does not disclose or suggest "a searcher that is one of enabled for operation or disabled from operation in accordance with a value" as the Examiner contends. In fact, the searcher of Ohno is intermittently operated: based on "when the main propagation paths are stable for a predetermined time interval" (para. [0017]) or "in response to power supply capacity of power supplying means" (para. [0020]). See also para. [0018], [0019], [0021], claim 1 and claim 11 of Ohno.

(A)(viii) THE COMBINATION OF THE THREE REFERENCES

One of ordinary skill in the art at the time the invention was made would not have considered the disclosure of Yun since it does not relate to searchers or searcher operation. As previously noted, the motivation of the inventor in the instant application was to improve searcher performance in view of the sub-optimal prior art searchers. Yun is directed to power control with signal quality estimation for smart antenna systems (see title of Yun). Power control does not relate to improving searcher performance. Clearly, Yun is from a non-analogous field.

As noted above, contrary to the Examiner's assertion, Yun is from a non-analogous field of endeavor since Yun does not consider or discuss any potential applications for searchers or searcher operation. As such, it is impermissible to combine the disclosure of Yun with the disclosures of Kang et al. and Ohno for the purposes of rejecting claim 1 of the instant

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

application.

The Examiner does not assert that Kang et al. or Ohno disclose "a searcher that is one of enabled for operation or disabled from operation **in accordance with the value of Io,**" as recited in claim 1. Thus, without the disclosure of Yun, the combination of Kang et al. and Ohno cannot be seen to render obvious the subject matter recited in claim 1.

(A)(ix) CONCLUSION

The claimed invention does not simply arrange old elements with each performing the same function it had been known to perform in the prior art (i.e., the improvement is more than the predictable use of prior art elements according to their established functions).

In view of the cited prior art, the claimed invention as a whole would not have been obvious to one of ordinary skill in the art at the time the invention was made. While neither the particular motivation nor the avowed purpose of the applicant controls, the objective reach of claim 1 does not extend to what is obvious. At the time of invention, while a known problem existed (searcher performance), the claimed invention comprises a non-obvious solution. See *KSR v. Teleflex*, as discussed above in Section (7)(A)(i). One skilled in the art would naturally look to prior art addressing the same problem as the invention at hand. See *In re Icon Health*, also as discussed above in Section (7)(A)(i). Yun does not address a similar problem nor does Yun relate to searchers or searcher operation. Yun is non-analogous art and should not be utilized for a §103(a) obviousness rejection against claims of the instant application.

The §103(a) rejection of claim 1 in view of the combination of Yun, Kang et al. and Ohno is improper and should not be upheld. Claim 1 is patentable and should be allowed.

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

(B) CLAIM 15

Claim 15 recites in part: "A method for operating a [CDMA] receiver, comprising: ...determining an instantaneous total received power (Io) of the received CDMA signal over m consecutive segments of the received CDMA signal; and using a maximum value of Io to identify one of m segments of the buffer on which a searcher is to be enabled for operation."

The Examiner rejected claim 15 on pp. 9-10 of the Final Office Action, arguing:

Regarding claim 15, Yun discloses a method for operating a code division, multiple access (CDMA) receiver, comprising: receiving a CDMA signal (figure 5, col. 1 lines 15 – 41, col. 2 lines 23 – 24); determining an instantaneous total received power (Io) of the received CDMA signal over m consecutive segments of the received CDMA signal (col. 12 lines 42 – 48, col. 37 lines 39 – 45, col. 38 lines 1 – 51, col. 39 lines 50 – 60). Yun does not disclose storing samples of the received CDMA signal into a buffer and using a maximum value to identify one of m segments of the searcher buffer on which a searcher is to be enabled for operation.

In the same field of endeavor, however, Kang discloses storing samples of the received CDMA signal into a buffer (figure 4, paragraphs 24 – 25) and using a maximum value to identify one of m segments of the buffer on which a searcher is to be enabled for operation (figure 4, paragraphs 13, 24, 25, 37, 39, 40; where Kang is not explicit about to identify one of m segments of the searcher buffer). Kang also shows an RF section for receiving a CDMA signal (paragraph 4) and a circuit for determining a total received power (Io) of the received CDMA signal (figure 2 elements 32 – 34, paragraph 10). Also, Kang does not explicitly specify instantaneous however the total received power (Io) would be the energy result of I^2+Q^2 .

Therefore it would have been obvious to one skilled in the art at the time of invention was made [*sic*] to use storing samples of the received CDMA signal

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

into a buffer and using a maximum value to identify one of m segments of the searcher buffer on which a searcher is to be enabled for operation as taught by Kang in the system of Yun to allow the system to perform efficiently and to avoid unnecessary operations (paragraph 13).

In the same field of endeavor, however, Ohno discloses to identify one of m segments of the searcher buffer (paragraphs 44 – 45, 54, figures 3, 7).

Therefore it would have been obvious to one skilled in the art at the time of invention was made [*sic*] to use to identify one of m segments of the searcher buffer as taught by Ohno in the system of Yun to reduce power consumption in a receiver (paragraph 15).

The arguments presented above in Section (7)(A) with respect to claim 1 are herein repeated and incorporated with respect to claim 15. Yun is non-analogous art and should not be utilized in a §103(a) obviousness rejection of claim 15. Furthermore, Kang et al. do not disclose or suggest utilizing "instantaneous total received power (Io)."

The rejection of elements of claim 15 in view of Kang et al. is unclear because the Examiner admits that "Kang is not explicit about to identify one of m segments of the searcher buffer" but also asserts "Kang discloses... using a maximum value to identify one of m segments of the buffer on which a searcher is to be enabled for operation." Thus, the role of Kang et al. in the rejection of claim 15 is imprecise.

However, notwithstanding this lack of clarity, Kang et al. does not disclose or suggest at least "using a maximum value of Io to identify one of m segments of the buffer on which a searcher is to be enabled for operation," as recited in claim 15. In the cited portions of Kang et al., the searcher performs the various operations including using a shift register 110 (FIG. 4 of Kang et al.) to store a current hypothesis vector that is changed at every transition of a clock signal S10. See para. [0024] of Kang et al. In contrast, claim 15 recites that, using a maximum value of Io, one of m segments of the buffer is identified ***on which a searcher is to be enabled for operation.***

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

That is, the searcher itself does not perform this step since it is enabled *by* this step. Kang et al. do not disclose or suggest "identify[ing] one of m segments of the buffer on which a searcher is to be enabled for operation," as recited in claim 15, since Kang et al. only enable or disable the searcher based on the searcher clock signal. Furthermore, Kang et al. do not disclose or suggest "using a maximum value of Io to identify one of m segments of the buffer on which a searcher is to be enabled for operation," as recited in claim 15.

The disclosure of Ohno is as described above. While the Examiner asserts that "Ohno discloses to identify one of m segments of the searcher buffer (paragraphs 44 – 45, 54, figures 3, 7)," there is no disclosure of this in the cited portions of Ohno. Furthermore, it is erroneous to consider this element of claim 15 in the absence of the surrounding language. That is, Ohno does not disclose or suggest "using a maximum value of Io to identify one of m segments of the buffer on which a searcher is to be enabled for operation," as recited in claim 15, nor does the Examiner argue otherwise.

Claim 15 is patentable and should be allowed.

(C) CLAIM 4

Claim 4 depends from claim 1. Thus, the arguments presented above in Section (7)(A) with respect to claim 1 are herein repeated and incorporated with respect to claim 4.

Claim 4 recites: "A CDMA receiver as in claim 1, wherein said searcher comprises a searcher buffer for storing Inphase and Quadrature (I/Q) samples, and wherein said searcher is responsive to a trigger signal generated by said circuit for storing I/Q samples into said searcher buffer."

The Examiner rejected claim 4 on pages 7-8 of the Final Office Action, stating:

Regarding claim 4, Yun further discloses wherein said searcher comprises a

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

searcher buffer for storing Inphase and Quadrature (I/Q) samples (col. 37 line 15 – col. 38 line 54). Kang further discloses wherein said searcher comprises a searcher buffer for storing Inphase and Quadrature (I/Q) samples, and wherein said searcher is storing I/Q samples into said buffer (paragraphs 9, 10, 32). Ohno further discloses herein [*sic*] said searcher is responsive to a trigger signal generated by said circuit (paragraphs 44 – 45, 54, figures 3, 7).

The Examiner appears to argue that Ohno discloses "wherein said searcher is responsive to a trigger signal." Regardless of whether or not Ohno discloses what the Examiner alleges, claim 4 actually recites: "wherein said searcher is responsive to a trigger signal... **for storing I/Q samples into said searcher buffer.**" Ohno does not disclose or suggest that the searcher "stor[es] I/Q samples into [a] searcher buffer" in response to a trigger signal. Ohno only discusses turning operation of the searcher on and off. See para. [0054] of Ohno. Clearly Ohno cannot be seen to disclose or suggest at least this aspect of claim 4.

Claim 4 is patentable and should be allowed.

(D) CLAIMS 8, 14, 29, 33

Claims 8, 14, 29 and 33 depend from independent claims 1, 9, 26 and 30. As such, the arguments presented above in Section (7)(A) with respect to claim 1, and as further applied to claims 9, 26 and 30, are herein repeated and incorporated with respect to claims 8, 14, 29 and 33.

Claim 8 will be considered as representative of claims 8, 14, 29 and 33.

Claim 8 recites: "A CDMA receiver as in claim 1, wherein the value of Io is computed over numbers of samples that are less than the total size of a searcher sample buffer, and is used to select samples from only a portion of the searcher sample buffer for use by the searcher."

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

The Examiner rejected claim 8 on page 8 of the Final Office Action, stating:

Regarding claim 8, Yun discloses Io as shown above. Yun does not disclose wherein the value is computed over numbers of samples that are less than the total size of a searcher sample buffer, and is used to select samples from only a portion of the searcher sample buffer for use by the searcher. However Kang further discloses wherein a value is computed over numbers of samples that are less than the total size of a searcher sample buffer, and is used to select samples from only a portion of the searcher sample buffer for use by the searcher (paragraphs 24, 38 – 40; where P and/or Q are less than M and where half slot is being interpreted as less than the total size of a searcher sample buffer).

There is no disclosure or suggestion by Kang et al. that the energy calculator 160 computes or determines instantaneous total received power (Io), as recited in claim 8. See para. [0035].

Furthermore, Kang et al. do not disclose or suggest computing instantaneous total received power (Io) "over numbers of samples that are less than the total size of a searcher sample buffer," as recited in claim 8.

In addition, Kang et al. do not disclose or suggest using a computed value of instantaneous total received power (Io) "to select samples from only a portion of the searcher sample buffer for use by the searcher." The searcher of Kang et al. operates as discussed above. The Examiner fails to identify any specific portion of Kang et al. that discloses or suggests "select[ing] samples... for use by the searcher," let alone "select[ing] samples from only a portion of [a] searcher sample buffer," as recited in claim 8.

Claim 8 is patentable and should be allowed.

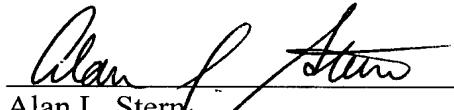
Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

CONCLUSION

For at least the above reasons, the Applicant/Appellant contends that the proposed combination of Yun, Kang et al. and Ohno does not render obvious the claims of the instant application. The Applicant/Appellant respectfully requests that the Board reverse the final rejection in the Final Office Action of March 8, 2007, and further that the Board rule that the pending claims are patentable over the cited art.

Respectfully submitted:

HARRINGTON & SMITH, PC



Alan L. Stern
Reg. No.: 59,071

September 11, 2007
Date

Customer No.: 29683

HARRINGTON & SMITH, PC
4 Research Drive
Shelton, CT 06484-6212
Telephone: (203) 925-9400 ext. 18
Facsimile: (203) 944-0245
E-mail: astern@hspatent.com

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Appeal Brief – Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Ann Okrentowich
Name of Person Making Deposit

9-11-07
Date

(8) CLAIMS APPENDIX

1. (Previously Presented) A code division, multiple access (CDMA) receiver, comprising:

a RF section for receiving a CDMA signal;

a circuit for determining an instantaneous total received power (I_o) of the received CDMA signal; and

a searcher that is one of enabled for operation or disabled from operation in accordance with the value of I_o .

2. (Original) A CDMA receiver as in claim 1, wherein said circuit comprises a comparator for comparing I_o against a threshold, and for generating a searcher trigger signal only when I_o exceeds the threshold.

3. (Original) A CDMA receiver as in claim 1, wherein said circuit comprises a comparator for comparing I_o against a threshold, and for generating a searcher trigger signal when I_o exceeds the threshold, or if I_o does not exceed the threshold, for generating the searcher trigger signal within some predetermined period of time.

4. (Previously Presented) A CDMA receiver as in claim 1, wherein said searcher

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

comprises a searcher buffer for storing Inphase and Quadrature (I/Q) samples, and wherein said searcher is responsive to a trigger signal generated by said circuit for storing I/Q samples into said searcher buffer.

5. (Original) A CDMA receiver as in claim 1, wherein said circuit operates to accumulate n symbol power samples, to scale the n accumulated symbol power samples, and to compare the scaled symbol power samples to a reference value.

6. (Original) A CDMA receiver as in claim 5, wherein said circuit further operates, if the scaled symbol power value is above the reference value, to generate a trigger for the searcher to cause the searcher to begin storing Inphase and Quadrature (I/Q) samples into a searcher buffer.

7. (Original) A CDMA receiver as in claim 6, wherein said circuit further operates, if the scaled symbol power value is below the reference value, to repeat accumulating, scaling and comparing the signal power samples, and if the scaled symbol power value does not exceed the reference value after x iterations, to generate the trigger for the searcher to cause the searcher to begin storing I/Q samples into the searcher buffer for processing the data for acquisition or set maintenance purposes.

8. (Original) A CDMA receiver as in claim 1, wherein the value of Io is computed over numbers of samples that are less than the total size of a searcher sample buffer, and is used to select samples from only a portion of the searcher sample buffer for use by the searcher.

9. (Original) A method for operating a code division, multiple access (CDMA) receiver, comprising:

receiving a CDMA signal;

determining an instantaneous total received power (I_o) of the received CDMA signal; and

enabling or disabling a searcher for operation in accordance with the value of I_o .

10. (Original) A method as in claim 9, wherein determining the instantaneous total received power comprises comparing I_o against a threshold, and generating a searcher trigger signal only when I_o exceeds the threshold.

11. (Original) A method as in claim 9, wherein determining the instantaneous total received power comprises comparing I_o against a threshold, and generating a searcher trigger signal only when I_o exceeds the threshold, or if I_o does not exceed the threshold, generating the searcher trigger signal within some predetermined period of time.

12. (Original) A method as in claim 9, wherein the searcher includes a buffer for storing Inphase and Quadrature (I/Q) samples, and further comprising storing I/Q samples into the buffer in response to a trigger signal generated when I_o exceeds a threshold, or if I_o does not exceed the

threshold, to a trigger signal generated within some predetermined period of time.

13. (Original) A method as in claim 9, wherein said method operates to accumulate n symbol power samples, to scale the n accumulated symbol power samples, to compare the scaled symbol power samples to a reference value, and if the scaled symbol power value is above the reference value, to generate a trigger to begin storing Inphase and Quadrature (I/Q) samples into a searcher buffer, wherein said method further operates, if the scaled symbol power value is below the reference value, to repeat accumulating, scaling and comparing the signal power samples, and if the scaled symbol power value does not exceed the reference value after x repetitions, to generate the trigger for the searcher to cause the searcher to begin storing I/Q samples into the searcher buffer.

14. (Original) A method as in claim 9, wherein the value of Io is determined over a number of samples that is less than the total size of a searcher sample buffer, and is used to select samples from only a portion of the searcher sample buffer for use by the searcher.

15. (Previously Presented) A method for operating a code division, multiple access (CDMA) receiver, comprising:

receiving a CDMA signal;

storing samples of the received CDMA signal into a buffer;

determining an instantaneous total received power (I_o) of the received CDMA signal over m consecutive segments of the received CDMA signal; and

using a maximum value of I_o to identify one of m segments of the buffer on which a searcher is to be enabled for operation.

16. (Previously Presented) A method for operating a code division, multiple access (CDMA) receiver, comprising:

receiving a CDMA signal and storing samples of the received CDMA signal into a buffer of a searcher while determining an instantaneous total received power (I_o) of the received CDMA signal; and

selectively one of generating or not generating a trigger signal to the searcher in accordance with the value of I_o , wherein when generated the searcher trigger signal causes the searcher to process the stored samples.

17. (Original) A method as in claim 16, wherein determining the instantaneous total received power comprises comparing I_o against a threshold, and generating the searcher trigger signal only when I_o exceeds the threshold.

18. (Original) A method as in claim 16, wherein determining the instantaneous total received power comprises comparing I_o against a threshold, and generating the searcher trigger signal only when I_o exceeds the threshold, or if I_o does not exceed the threshold, generating the searcher trigger signal within some predetermined period of time.

19. (Original) A method as in claim 16, wherein the searcher buffer stores Inphase and Quadrature (I/Q) samples.

20. (Original) A method as in claim 16, wherein said method operates to accumulate n symbol power samples, to scale the n accumulated symbol power samples, to compare the scaled symbol power samples to a reference value, and if the scaled symbol power value is above the reference value, to generate the searcher trigger signal, wherein said method further operates, if the scaled symbol power value is below the reference value, to repeat accumulating, scaling and comparing the signal power samples, and if the scaled symbol power value does not exceed the reference value after some period of time, to generate the searcher trigger signal.

21. (Previously Presented) A code division, multiple access (CDMA) receiver, comprising:

a receiver circuit for receiving a CDMA signal;

a memory for storing samples of the received CDMA signal; and

a signal processor circuit for determining, during a time that the samples are being stored in said memory, an instantaneous total received power (I_o) of the received CDMA signal for selectively one of generating or not generating a searcher trigger signal in accordance with the value of I_o , wherein when generated the searcher trigger signal causes the searcher to process the stored samples.

22. (Original) A CDMA receiver as in claim 21, wherein said signal processor circuit, when determining the instantaneous total received power, compares I_o against a threshold, and generates the searcher trigger signal only when I_o exceeds the threshold.

23. (Previously Presented) A CDMA receiver as in claim 21, wherein said signal processor circuit, when determining the instantaneous total received power, compares I_o against a threshold, and generates the searcher trigger signal when I_o exceeds the threshold, or if I_o does not exceed the threshold, generates the searcher trigger signal within some predetermined period of time.

24. (Original) A CDMA receiver as in claim 21, wherein said memory stores Inphase and Quadrature (I/Q) samples.

25. (Original) A CDMA receiver as in claim 21, wherein said signal processor circuit operates to accumulate n symbol power samples, to scale the n accumulated symbol power

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

samples, to compare the scaled symbol power samples to a reference value, and if the scaled symbol power value is above the reference value, generates the searcher trigger signal, wherein if the scaled symbol power value is below the reference value, said signal processor circuit repeats accumulating, scaling and comparing the signal power samples, and if the scaled symbol power value does not exceed the reference value after some period of time, generates the searcher trigger signal.

26. (Previously Presented) A radio frequency (RF) receiver, comprising:

means for receiving a RF signal;

means for determining an instantaneous total received power (I_o) of the received RF signal; and

means for one of enabling a searcher means for operation or disabling the searcher means from operation in accordance with the value of I_o .

27. (Previously Presented) A RF receiver as in claim 26, where said enabling means comprises comparator means for comparing I_o against a threshold, and for generating a searcher means trigger signal only when I_o exceeds the threshold.

28. (Previously Presented) A RF receiver as in claim 27, where said enabling means is

responsive to I_o not exceeding the threshold within some predetermined period of time, for generating the searcher means trigger signal.

29. (Previously Presented) A RF receiver as in claim 26, where the value of I_o is determined over numbers of samples that are less than a total size of a searcher means sample buffer means, and further comprising means to select samples from only a portion of the sample buffer means for use by the searcher means.

30. (Previously Presented) A method for operating a radio frequency (RF) receiver, comprising:

a step for receiving a RF signal;

a step for determining an instantaneous total received power (I_o) of the received RF signal; and

a step for selectively one of enabling or disabling a searcher for operation in accordance with the value of I_o .

31. (Previously Presented) A method as in claim 30, where the step for determining the instantaneous total received power comprises comparing I_o against a threshold, and generating a searcher trigger signal only when I_o exceeds the threshold.

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

32. (Previously Presented) A method as in claim 31, where the step for determining the instantaneous total received power further comprises, if I_o does not exceed the threshold within some predetermined period of time, a step for generating the searcher trigger signal.

33. (Previously Presented) A method as claim 30, where the step for determining the instantaneous total received power determines the value of I_o over numbers of samples that are less than a total size of a sample buffer, and further comprising a step for selecting samples from only a portion of the sample buffer for use by the searcher.

END OF CLAIMS

Application No. 09/893,143
Appeal Brief Mailed on September 11, 2007
Corresponding to a Notice of Appeal Filed on June 11, 2007

(9) EVIDENCE APPENDIX

The attached exhibits include: the U.S. Patent Publication corresponding to the application at issue (Exhibit A), the three references relied on by the Examiner in rejecting the claims of the instant application (Exhibits B-D), three court decisions relevant to this appeal, *KSR v. Teleflex* (Exhibit E), *Leapfrog v. Fisher-Price* (Exhibit F), and *In re Icon Health* (Exhibit G), and the Final Office Action at issue (Exhibit H).

- Exhibit A: Kansakoski, et al., U.S. Patent Publication No. 2003/0002563.
- Exhibit B: Yun, U.S. Patent No. 6,463,295.
- Exhibit C: Kang et al., U.S. Patent Publication No. 2002/0181632.
- Exhibit D: Ohno, U.S. Patent Publication No. 2001/0009562.
- Exhibit E: *KSR International Co. v. Teleflex Inc., et. al.*, 550 U.S. ___, 127 S. Ct. 1727 (2007).
- Exhibit F: *Leapfrog Enterprises, Inc. v. Fisher-Price, Inc. et al.*, No. 06-1402 (Fed.Cir. May 9, 2007).
- Exhibit G: *In re Icon Health and Fitness, Inc.*, No. 06-1573 (Fed.Cir. Aug. 1, 2007).
- Exhibit H: Final Office Action mailed on March 8, 2007 for the instant application.

(10) RELATED PROCEEDINGS APPENDIX

There are no known decisions rendered by a court or the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) of 37 C.F.R. §41.37.

Syllabus

NOTE: Where it is feasible, a syllabus (headnote) will be released, as is being done in connection with this case, at the time the opinion is issued. The syllabus constitutes no part of the opinion of the Court but has been prepared by the Reporter of Decisions for the convenience of the reader. See *United States v. Detroit Timber & Lumber Co.*, 200 U. S. 321, 337.

SUPREME COURT OF THE UNITED STATES**Syllabus****KSR INTERNATIONAL CO. v. TELEFLEX INC. ET AL.****CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR
THE FEDERAL CIRCUIT**

No. 04-1350. Argued November 28, 2006—Decided April 30, 2007

To control a conventional automobile's speed, the driver depresses or releases the gas pedal, which interacts with the throttle via a cable or other mechanical link. Because the pedal's position in the footwell normally cannot be adjusted, a driver wishing to be closer or farther from it must either reposition himself in the seat or move the seat, both of which can be imperfect solutions for smaller drivers in cars with deep footwells. This prompted inventors to design and patent pedals that could be adjusted to change their locations. The Asano patent reveals a support structure whereby, when the pedal location is adjusted, one of the pedal's pivot points stays fixed. Asano is also designed so that the force necessary to depress the pedal is the same regardless of location adjustments. The Redding patent reveals a different, sliding mechanism where both the pedal and the pivot point are adjusted.

In newer cars, computer-controlled throttles do not operate through force transferred from the pedal by a mechanical link, but open and close valves in response to electronic signals. For the computer to know what is happening with the pedal, an electronic sensor must translate the mechanical operation into digital data. Inventors had obtained a number of patents for such sensors. The so-called '936 patent taught that it was preferable to detect the pedal's position in the pedal mechanism, not in the engine, so the patent disclosed a pedal with an electronic sensor on a pivot point in the pedal assembly. The Smith patent taught that to prevent the wires connecting the sensor to the computer from chafing and wearing out, the sensor should be put on a fixed part of the pedal assembly rather than in or on the pedal's footpad. Inventors had also patented self-contained modular sensors, which can be taken off the shelf and attached to any

Syllabus

mechanical pedal to allow it to function with a computer-controlled throttle. The '068 patent disclosed one such sensor. Chevrolet also manufactured trucks using modular sensors attached to the pedal support bracket, adjacent to the pedal and engaged with the pivot shaft about which the pedal rotates. Other patents disclose electronic sensors attached to adjustable pedal assemblies. For example, the Rixon patent locates the sensor in the pedal footpad, but is known for wire chafing.

After petitioner KSR developed an adjustable pedal system for cars with cable-actuated throttles and obtained its '976 patent for the design, General Motors Corporation (GMC) chose KSR to supply adjustable pedal systems for trucks using computer-controlled throttles. To make the '976 pedal compatible with the trucks, KSR added a modular sensor to its design. Respondents (Teleflex) hold the exclusive license for the Engelmajer patent, claim 4 of which discloses a position-adjustable pedal assembly with an electronic pedal position sensor attached a fixed pivot point. Despite having denied a similar, broader claim, the U. S. Patent and Trademark Office (PTO) had allowed claim 4 because it included the limitation of a fixed pivot position, which distinguished the design from Redding's. Asano was neither included among the Engelmajer patent's prior art references nor mentioned in the patent's prosecution, and the PTO did not have before it an adjustable pedal with a fixed pivot point. After learning of KSR's design for GMC, Teleflex sued for infringement, asserting that KSR's pedal system infringed the Engelmajer patent's claim 4. KSR countered that claim 4 was invalid under §103 of the Patent Act, which forbids issuance of a patent when "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art."

Graham v. John Deere Co. of Kansas City, 383 U. S. 1, 17–18, set out an objective analysis for applying §103: "[T]he scope and content of the prior art are . . . determined; differences between the prior art and the claims at issue are . . . ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented." While the sequence of these questions might be reordered in any particular case, the factors define the controlling inquiry. However, seeking to resolve the obviousness question with more uniformity and consistency, the Federal Circuit has employed a "teaching, suggestion, or motivation" (TSM) test, under which a pat-

Syllabus

ent claim is only proved obvious if the prior art, the problem's nature, or the knowledge of a person having ordinary skill in the art reveals some motivation or suggestion to combine the prior art teachings.

The District Court granted KSR summary judgment. After reviewing pedal design history, the Engelgau patent's scope, and the relevant prior art, the court considered claim 4's validity, applying *Graham*'s framework to determine whether under summary-judgment standards KSR had demonstrated that claim 4 was obvious. The court found "little difference" between the prior art's teachings and claim 4: Asano taught everything contained in the claim except using a sensor to detect the pedal's position and transmit it to a computer controlling the throttle. That additional aspect was revealed in, e.g., the '068 patent and Chevrolet's sensors. The court then held that KSR satisfied the TSM test, reasoning (1) the state of the industry would lead inevitably to combinations of electronic sensors and adjustable pedals, (2) Rixon provided the basis for these developments, and (3) Smith taught a solution to Rixon's chafing problems by positioning the sensor on the pedal's fixed structure, which could lead to the combination of a pedal like Asano with a pedal position sensor.

Reversing, the Federal Circuit ruled the District Court had not applied the TSM test strictly enough, having failed to make findings as to the specific understanding or principle within a skilled artisan's knowledge that would have motivated one with no knowledge of the invention to attach an electronic control to the Asano assembly's support bracket. The Court of Appeals held that the District Court's recourse to the nature of the problem to be solved was insufficient because, unless the prior art references addressed the precise problem that the patentee was trying to solve, the problem would not motivate an inventor to look at those references. The appeals court found that the Asano pedal was designed to ensure that the force required to depress the pedal is the same no matter how the pedal is adjusted, whereas Engelgau sought to provide a simpler, smaller, cheaper adjustable electronic pedal. The Rixon pedal, said the court, suffered from chafing but was not designed to solve that problem and taught nothing helpful to Engelgau's purpose. Smith, in turn, did not relate to adjustable pedals and did not necessarily go to the issue of motivation to attach the electronic control on the pedal assembly's support bracket. So interpreted, the court held, the patents would not have led a person of ordinary skill to put a sensor on an Asano-like pedal. That it might have been obvious to try that combination was likewise irrelevant. Finally, the court held that genuine issues of material fact precluded summary judgment.

Held: The Federal Circuit addressed the obviousness question in a narrow, rigid manner that is inconsistent with §103 and this Court's

Syllabus

precedents. KSR provided convincing evidence that mounting an available sensor on a fixed pivot point of the Asano pedal was a design step well within the grasp of a person of ordinary skill in the relevant art and that the benefit of doing so would be obvious. Its arguments, and the record, demonstrate that the Engelgau patent's claim 4 is obvious. Pp. 11–24.

1. *Graham* provided an expansive and flexible approach to the obviousness question that is inconsistent with the way the Federal Circuit applied its TSM test here. Neither §103's enactment nor *Graham*'s analysis disturbed the Court's earlier instructions concerning the need for caution in granting a patent based on the combination of elements found in the prior art. See *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*, 340 U. S. 147, 152. Such a combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. See, e.g., *United States v. Adams*, 383 U. S. 39, 50–52. When a work is available in one field, design incentives and other market forces can prompt variations of it, either in the same field or in another. If a person of ordinary skill in the art can implement a predictable variation, and would see the benefit of doing so, §103 likely bars its patentability. Moreover, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond that person's skill. A court must ask whether the improvement is more than the predictable use of prior-art elements according to their established functions. Following these principles may be difficult if the claimed subject matter involves more than the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement. To determine whether there was an apparent reason to combine the known elements in the way a patent claims, it will often be necessary to look to interrelated teachings of multiple patents; to the effects of demands known to the design community or present in the marketplace; and to the background knowledge possessed by a person having ordinary skill in the art. To facilitate review, this analysis should be made explicit. But it need not seek out precise teachings directed to the challenged claim's specific subject matter, for a court can consider the inferences and creative steps a person of ordinary skill in the art would employ. Pp. 11–14.

(b) The TSM test captures a helpful insight: A patent composed of several elements is not proved obvious merely by demonstrating that each element was, independently, known in the prior art. Although common sense directs caution as to a patent application claiming as

Syllabus

innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the art to combine the elements as the new invention does. Inventions usually rely upon building blocks long since uncovered, and claimed discoveries almost necessarily will be combinations of what, in some sense, is already known. Helpful insights, however, need not become rigid and mandatory formulas. If it is so applied, the TSM test is incompatible with this Court's precedents. The diversity of inventive pursuits and of modern technology counsels against confining the obviousness analysis by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasizing the importance of published articles and the explicit content of issued patents. In many fields there may be little discussion of obvious techniques or combinations, and market demand, rather than scientific literature, may often drive design trends. Granting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, for patents combining previously known elements, deprive prior inventions of their value or utility. Since the TSM test was devised, the Federal Circuit doubtless has applied it in accord with these principles in many cases. There is no necessary inconsistency between the test and the *Graham* analysis. But a court errs where, as here, it transforms general principle into a rigid rule limiting the obviousness inquiry. Pp. 14–15.

(c) The flaws in the Federal Circuit's analysis relate mostly to its narrow conception of the obviousness inquiry consequent in its application of the TSM test. The Circuit first erred in holding that courts and patent examiners should look only to the problem the patentee was trying to solve. Under the correct analysis, any need or problem known in the field and addressed by the patent can provide a reason for combining the elements in the manner claimed. Second, the appeals court erred in assuming that a person of ordinary skill in the art attempting to solve a problem will be led only to those prior art elements designed to solve the same problem. The court wrongly concluded that because Asano's primary purpose was solving the constant ratio problem, an inventor considering how to put a sensor on an adjustable pedal would have no reason to consider putting it on the Asano pedal. It is common sense that familiar items may have obvious uses beyond their primary purposes, and a person of ordinary skill often will be able to fit the teachings of multiple patents together like pieces of a puzzle. Regardless of Asano's primary purpose, it provided an obvious example of an adjustable pedal with a fixed pivot point, and the prior art was replete with patents indicating that such a point was an ideal mount for a sensor. Third, the

Syllabus

court erred in concluding that a patent claim cannot be proved obvious merely by showing that the combination of elements was obvious to try. When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill in the art has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. Finally, the court drew the wrong conclusion from the risk of courts and patent examiners falling prey to hindsight bias. Rigid preventative rules that deny recourse to common sense are neither necessary under, nor consistent with, this Court's case law. Pp. 15–18.

2. Application of the foregoing standards demonstrates that claim 4 is obvious. Pp. 18–23.

(a) The Court rejects Teleflex's argument that the Asano pivot mechanism's design prevents its combination with a sensor in the manner claim 4 describes. This argument was not raised before the District Court, and it is unclear whether it was raised before the Federal Circuit. Given the significance of the District Court's finding that combining Asano with a pivot-mounted pedal position sensor fell within claim 4's scope, it is apparent that Teleflex would have made clearer challenges if it intended to preserve this claim. Its failure to clearly raise the argument, and the appeals court's silence on the issue, lead this Court to accept the District Court's conclusion. Pp. 18–20.

(b) The District Court correctly concluded that when Engelgau designed the claim 4 subject matter, it was obvious to a person of ordinary skill in the art to combine Asano with a pivot-mounted pedal position sensor. There then was a marketplace creating a strong incentive to convert mechanical pedals to electronic pedals, and the prior art taught a number of methods for doing so. The Federal Circuit considered the issue too narrowly by, in effect, asking whether a pedal designer writing on a blank slate would have chosen both Asano and a modular sensor similar to the ones used in the Chevrolet trucks and disclosed in the '068 patent. The proper question was whether a pedal designer of ordinary skill in the art, facing the wide range of needs created by developments in the field, would have seen an obvious benefit to upgrading Asano with a sensor. For such a designer starting with Asano, the question was where to attach the sensor. The '936 patent taught the utility of putting the sensor on the pedal device. Smith, in turn, explained not to put the sensor on the pedal footpad, but instead on the structure. And from Rixon's known wire-chafing problems, and Smith's teaching that the pedal assemblies must not precipitate any motion in the connecting wires,

Syllabus

the designer would know to place the sensor on a nonmoving part of the pedal structure. The most obvious such point is a pivot point. The designer, accordingly, would follow Smith in mounting the sensor there. Just as it was possible to begin with the objective to upgrade Asano to work with a computer-controlled throttle, so too was it possible to take an adjustable electronic pedal like Rixon and seek an improvement that would avoid the wire-chafing problem. Teleflex has not shown anything in the prior art that taught away from the use of Asano, nor any secondary factors to dislodge the determination that claim 4 is obvious. Pp. 20–23.

3. The Court disagrees with the Federal Circuit's holding that genuine issues of material fact precluded summary judgment. The ultimate judgment of obviousness is a legal determination. *Graham*, 383 U. S., at 17. Where, as here, the prior art's content, the patent claim's scope, and the level of ordinary skill in the art are not in material dispute and the claim's obviousness is apparent, summary judgment is appropriate. P. 23.

119 Fed. Appx. 282, reversed and remanded.

KENNEDY, J., delivered the opinion for a unanimous Court.

Opinion of the Court

NOTICE: This opinion is subject to formal revision before publication in the preliminary print of the United States Reports. Readers are requested to notify the Reporter of Decisions, Supreme Court of the United States, Washington, D. C. 20543, of any typographical or other formal errors, in order that corrections may be made before the preliminary print goes to press.

SUPREME COURT OF THE UNITED STATES

No. 04-1350

KSR INTERNATIONAL CO., PETITIONER *v.*
TELEFLEX INC. ET AL.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF
APPEALS FOR THE FEDERAL CIRCUIT

[April 30, 2007]

JUSTICE KENNEDY delivered the opinion of the Court.

Teleflex Incorporated and its subsidiary Technology Holding Company—both referred to here as Teleflex—sued KSR International Company for patent infringement. The patent at issue, United States Patent No. 6,237,565 B1, is entitled “Adjustable Pedal Assembly With Electronic Throttle Control.” Supplemental App. 1. The patentee is Steven J. Engelgau, and the patent is referred to as “the Engelgau patent.” Teleflex holds the exclusive license to the patent.

Claim 4 of the Engelgau patent describes a mechanism for combining an electronic sensor with an adjustable automobile pedal so the pedal’s position can be transmitted to a computer that controls the throttle in the vehicle’s engine. When Teleflex accused KSR of infringing the Engelgau patent by adding an electronic sensor to one of KSR’s previously designed pedals, KSR countered that claim 4 was invalid under the Patent Act, 35 U. S. C. §103, because its subject matter was obvious.

Section 103 forbids issuance of a patent when “the differences between the subject matter sought to be pat-

Opinion of the Court

ented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains."

In *Graham v. John Deere Co. of Kansas City*, 383 U. S. 1 (1966), the Court set out a framework for applying the statutory language of §103, language itself based on the logic of the earlier decision in *Hotchkiss v. Greenwood*, 11 How. 248 (1851), and its progeny. See 383 U. S., at 15–17. The analysis is objective:

"Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented." *Id.*, at 17–18.

While the sequence of these questions might be reordered in any particular case, the factors continue to define the inquiry that controls. If a court, or patent examiner, conducts this analysis and concludes the claimed subject matter was obvious, the claim is invalid under §103.

Seeking to resolve the question of obviousness with more uniformity and consistency, the Court of Appeals for the Federal Circuit has employed an approach referred to by the parties as the "teaching, suggestion, or motivation" test (TSM test), under which a patent claim is only proved obvious if "some motivation or suggestion to combine the prior art teachings" can be found in the prior art, the nature of the problem, or the knowledge of a person having ordinary skill in the art. See, e.g., *Al-Site Corp. v. VSI*

Opinion of the Court

Int'l, Inc., 174 F. 3d 1308, 1323–1324 (CA Fed. 1999). KSR challenges that test, or at least its application in this case. See 119 Fed. Appx. 282, 286–290 (CA Fed. 2005). Because the Court of Appeals addressed the question of obviousness in a manner contrary to §103 and our precedents, we granted certiorari, 547 U. S. ____ (2006). We now reverse.

I
A

In car engines without computer-controlled throttles, the accelerator pedal interacts with the throttle via cable or other mechanical link. The pedal arm acts as a lever rotating around a pivot point. In a cable-actuated throttle control the rotation caused by pushing down the pedal pulls a cable, which in turn pulls open valves in the carburetor or fuel injection unit. The wider the valves open, the more fuel and air are released, causing combustion to increase and the car to accelerate. When the driver takes his foot off the pedal, the opposite occurs as the cable is released and the valves slide closed.

In the 1990's it became more common to install computers in cars to control engine operation. Computer-controlled throttles open and close valves in response to electronic signals, not through force transferred from the pedal by a mechanical link. Constant, delicate adjustments of air and fuel mixture are possible. The computer's rapid processing of factors beyond the pedal's position improves fuel efficiency and engine performance.

For a computer-controlled throttle to respond to a driver's operation of the car, the computer must know what is happening with the pedal. A cable or mechanical link does not suffice for this purpose; at some point, an electronic sensor is necessary to translate the mechanical operation into digital data the computer can understand.

Before discussing sensors further we turn to the me-

Opinion of the Court

chanical design of the pedal itself. In the traditional design a pedal can be pushed down or released but cannot have its position in the footwell adjusted by sliding the pedal forward or back. As a result, a driver who wishes to be closer or farther from the pedal must either reposition himself in the driver's seat or move the seat in some way. In cars with deep footwells these are imperfect solutions for drivers of smaller stature. To solve the problem, inventors, beginning in the 1970's, designed pedals that could be adjusted to change their location in the footwell. Important for this case are two adjustable pedals disclosed in U. S. Patent Nos. 5,010,782 (filed July 28, 1989) (Asano) and 5,460,061 (filed Sept. 17, 1993) (Redding). The Asano patent reveals a support structure that houses the pedal so that even when the pedal location is adjusted relative to the driver, one of the pedal's pivot points stays fixed. The pedal is also designed so that the force necessary to push the pedal down is the same regardless of adjustments to its location. The Redding patent reveals a different, sliding mechanism where both the pedal and the pivot point are adjusted.

We return to sensors. Well before Engelgau applied for his challenged patent, some inventors had obtained patents involving electronic pedal sensors for computer-controlled throttles. These inventions, such as the device disclosed in U. S. Patent No. 5,241,936 (filed Sept. 9, 1991) ('936), taught that it was preferable to detect the pedal's position in the pedal assembly, not in the engine. The '936 patent disclosed a pedal with an electronic sensor on a pivot point in the pedal assembly. U. S. Patent No. 5,063,811 (filed July 9, 1990) (Smith) taught that to prevent the wires connecting the sensor to the computer from chafing and wearing out, and to avoid grime and damage from the driver's foot, the sensor should be put on a fixed part of the pedal assembly rather than in or on the pedal's footpad.

Opinion of the Court

In addition to patents for pedals with integrated sensors inventors obtained patents for self-contained modular sensors. A modular sensor is designed independently of a given pedal so that it can be taken off the shelf and attached to mechanical pedals of various sorts, enabling the pedals to be used in automobiles with computer-controlled throttles. One such sensor was disclosed in U. S. Patent No. 5,385,068 (filed Dec. 18, 1992) ('068). In 1994, Chevrolet manufactured a line of trucks using modular sensors "attached to the pedal support bracket, adjacent to the pedal and engaged with the pivot shaft about which the pedal rotates in operation." 298 F. Supp. 2d 581, 589 (ED Mich. 2003).

The prior art contained patents involving the placement of sensors on adjustable pedals as well. For example, U. S. Patent No. 5,819,593 (filed Aug. 17, 1995) (Rixon) discloses an adjustable pedal assembly with an electronic sensor for detecting the pedal's position. In the Rixon pedal the sensor is located in the pedal footpad. The Rixon pedal was known to suffer from wire chafing when the pedal was depressed and released.

This short account of pedal and sensor technology leads to the instant case.

B

KSR, a Canadian company, manufactures and supplies auto parts, including pedal systems. Ford Motor Company hired KSR in 1998 to supply an adjustable pedal system for various lines of automobiles with cable-actuated throttle controls. KSR developed an adjustable mechanical pedal for Ford and obtained U. S. Patent No. 6,151,976 (filed July 16, 1999) ('976) for the design. In 2000, KSR was chosen by General Motors Corporation (GMC or GM) to supply adjustable pedal systems for Chevrolet and GMC light trucks that used engines with computer-controlled throttles. To make the '976 pedal compatible with the

Opinion of the Court

trucks, KSR merely took that design and added a modular sensor.

Teleflex is a rival to KSR in the design and manufacture of adjustable pedals. As noted, it is the exclusive licensee of the Engelgau patent. Engelgau filed the patent application on August 22, 2000 as a continuation of a previous application for U. S. Patent No. 6,109,241, which was filed on January 26, 1999. He has sworn he invented the patent's subject matter on February 14, 1998. The Engelgau patent discloses an adjustable electronic pedal described in the specification as a "simplified vehicle control pedal assembly that is less expensive, and which uses fewer parts and is easier to package within the vehicle." Engelgau, col. 2, lines 2-5, Supplemental App. 6. Claim 4 of the patent, at issue here, describes:

"A vehicle control pedal apparatus comprising:
a support adapted to be mounted to a vehicle structure;
an adjustable pedal assembly having a pedal arm moveable in for[e] and aft directions with respect to said support;
a pivot for pivotally supporting said adjustable pedal assembly with respect to said support and defining a pivot axis; and
an electronic control attached to said support for controlling a vehicle system;
said apparatus characterized by said electronic control being responsive to said pivot for providing a signal that corresponds to pedal arm position as said pedal arm pivots about said pivot axis between rest and applied positions wherein the position of said pivot remains constant while said pedal arm moves in fore and aft directions with respect to said pivot." *Id.*, col.

Opinion of the Court

6, lines 17–36, Supplemental App. 8 (diagram numbers omitted).

We agree with the District Court that the claim discloses “a position-adjustable pedal assembly with an electronic pedal position sensor attached to the support member of the pedal assembly. Attaching the sensor to the support member allows the sensor to remain in a fixed position while the driver adjusts the pedal.” 298 F. Supp. 2d, at 586–587.

Before issuing the Engelgau patent the U. S. Patent and Trademark Office (PTO) rejected one of the patent claims that was similar to, but broader than, the present claim 4. The claim did not include the requirement that the sensor be placed on a fixed pivot point. The PTO concluded the claim was an obvious combination of the prior art disclosed in Redding and Smith, explaining:

“Since the prior ar[t] references are from the field of endeavor, the purpose disclosed . . . would have been recognized in the pertinent art of Redding. Therefore it would have been obvious . . . to provide the device of Redding with the . . . means attached to a support member as taught by Smith.” *Id.*, at 595.

In other words Redding provided an example of an adjustable pedal and Smith explained how to mount a sensor on a pedal’s support structure, and the rejected patent claim merely put these two teachings together.

Although the broader claim was rejected, claim 4 was later allowed because it included the limitation of a fixed pivot point, which distinguished the design from Redding’s. *Ibid.* Engelgau had not included Asano among the prior art references, and Asano was not mentioned in the patent’s prosecution. Thus, the PTO did not have before it an adjustable pedal with a fixed pivot point. The patent issued on May 29, 2001 and was assigned to Teleflex.

Upon learning of KSR’s design for GM, Teleflex sent a

Opinion of the Court

warning letter informing KSR that its proposal would violate the Engelgau patent. “Teleflex believes that any supplier of a product that combines an adjustable pedal with an electronic throttle control necessarily employs technology covered by one or more” of Teleflex’s patents. *Id.*, at 585. KSR refused to enter a royalty arrangement with Teleflex; so Teleflex sued for infringement, asserting KSR’s pedal infringed the Engelgau patent and two other patents. *Ibid.* Teleflex later abandoned its claims regarding the other patents and dedicated the patents to the public. The remaining contention was that KSR’s pedal system for GM infringed claim 4 of the Engelgau patent. Teleflex has not argued that the other three claims of the patent are infringed by KSR’s pedal, nor has Teleflex argued that the mechanical adjustable pedal designed by KSR for Ford infringed any of its patents.

C

The District Court granted summary judgment in KSR’s favor. After reviewing the pertinent history of pedal design, the scope of the Engelgau patent, and the relevant prior art, the court considered the validity of the contested claim. By direction of 35 U. S. C. §282, an issued patent is presumed valid. The District Court applied *Graham*’s framework to determine whether under summary-judgment standards KSR had overcome the presumption and demonstrated that claim 4 was obvious in light of the prior art in existence when the claimed subject matter was invented. See §102(a).

The District Court determined, in light of the expert testimony and the parties’ stipulations, that the level of ordinary skill in pedal design was “an undergraduate degree in mechanical engineering (or an equivalent amount of industry experience) [and] familiarity with pedal control systems for vehicles.” 298 F. Supp. 2d, at 590. The court then set forth the relevant prior art, in-

Opinion of the Court

cluding the patents and pedal designs described above.

Following *Graham's* direction, the court compared the teachings of the prior art to the claims of Engelgau. It found "little difference." 298 F. Supp. 2d, at 590. Asano taught everything contained in claim 4 except the use of a sensor to detect the pedal's position and transmit it to the computer controlling the throttle. That additional aspect was revealed in sources such as the '068 patent and the sensors used by Chevrolet.

Under the controlling cases from the Court of Appeals for the Federal Circuit, however, the District Court was not permitted to stop there. The court was required also to apply the TSM test. The District Court held KSR had satisfied the test. It reasoned (1) the state of the industry would lead inevitably to combinations of electronic sensors and adjustable pedals, (2) Rixon provided the basis for these developments, and (3) Smith taught a solution to the wire chafing problems in Rixon, namely locating the sensor on the fixed structure of the pedal. This could lead to the combination of Asano, or a pedal like it, with a pedal position sensor.

The conclusion that the Engelgau design was obvious was supported, in the District Court's view, by the PTO's rejection of the broader version of claim 4. Had Engelgau included Asano in his patent application, it reasoned, the PTO would have found claim 4 to be an obvious combination of Asano and Smith, as it had found the broader version an obvious combination of Redding and Smith. As a final matter, the District Court held that the secondary factor of Teleflex's commercial success with pedals based on Engelgau's design did not alter its conclusion. The District Court granted summary judgment for KSR.

With principal reliance on the TSM test, the Court of Appeals reversed. It ruled the District Court had not been strict enough in applying the test, having failed to make "'finding[s] as to the specific understanding or principle

Opinion of the Court

within the knowledge of a skilled artisan that would have motivated one with no knowledge of [the] invention' . . . to attach an electronic control to the support bracket of the Asano assembly." 119 Fed. Appx., at 288 (brackets in original) (quoting *In re Kotzab*, 217 F.3d 1365, 1371 (CA Fed. 2000)). The Court of Appeals held that the District Court was incorrect that the nature of the problem to be solved satisfied this requirement because unless the "prior art references address[ed] the precise problem that the patentee was trying to solve," the problem would not motivate an inventor to look at those references. 119 Fed. Appx., at 288.

Here, the Court of Appeals found, the Asano pedal was designed to solve the "constant ratio problem"—that is, to ensure that the force required to depress the pedal is the same no matter how the pedal is adjusted—whereas Engelgau sought to provide a simpler, smaller, cheaper adjustable electronic pedal. *Ibid.* As for Rixon, the court explained, that pedal suffered from the problem of wire chafing but was not designed to solve it. In the court's view Rixon did not teach anything helpful to Engelgau's purpose. Smith, in turn, did not relate to adjustable pedals and did not "necessarily go to the issue of motivation to attach the electronic control on the support bracket of the pedal assembly." *Ibid.* When the patents were interpreted in this way, the Court of Appeals held, they would not have led a person of ordinary skill to put a sensor on the sort of pedal described in Asano.

That it might have been obvious to try the combination of Asano and a sensor was likewise irrelevant, in the court's view, because "[o]bvious to try" has long been held not to constitute obviousness." *Id.*, at 289 (quoting *In re Deuel*, 51 F. 3d 1552, 1559 (CA Fed. 1995)).

The Court of Appeals also faulted the District Court's consideration of the PTO's rejection of the broader version of claim 4. The District Court's role, the Court of Appeals

Opinion of the Court

explained, was not to speculate regarding what the PTO might have done had the Engelgau patent mentioned Asano. Rather, the court held, the District Court was obliged first to presume that the issued patent was valid and then to render its own independent judgment of obviousness based on a review of the prior art. The fact that the PTO had rejected the broader version of claim 4, the Court of Appeals said, had no place in that analysis.

The Court of Appeals further held that genuine issues of material fact precluded summary judgment. Teleflex had proffered statements from one expert that claim 4 “was a simple, elegant, and novel combination of features,” 119 Fed. Appx., at 290, compared to Rixon, and from another expert that claim 4 was nonobvious because, unlike in Rixon, the sensor was mounted on the support bracket rather than the pedal itself. This evidence, the court concluded, sufficed to require a trial.

II

A

We begin by rejecting the rigid approach of the Court of Appeals. Throughout this Court’s engagement with the question of obviousness, our cases have set forth an expansive and flexible approach inconsistent with the way the Court of Appeals applied its TSM test here. To be sure, *Graham* recognized the need for “uniformity and definiteness.” 383 U. S., at 18. Yet the principles laid down in *Graham* reaffirmed the “functional approach” of *Hotchkiss*, 11 How. 248. See 383 U. S., at 12. To this end, *Graham* set forth a broad inquiry and invited courts, where appropriate, to look at any secondary considerations that would prove instructive. *Id.*, at 17.

Neither the enactment of §103 nor the analysis in *Graham* disturbed this Court’s earlier instructions concerning the need for caution in granting a patent based on the combination of elements found in the prior art. For over a

Opinion of the Court

half century, the Court has held that a "patent for a combination which only unites old elements with no change in their respective functions . . . obviously withdraws what is already known into the field of its monopoly and diminishes the resources available to skillful men." *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*, 340 U. S. 147, 152 (1950). This is a principal reason for declining to allow patents for what is obvious. The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. Three cases decided after *Graham* illustrate the application of this doctrine.

In *United States v. Adams*, 383 U. S. 39, 40 (1966), a companion case to *Graham*, the Court considered the obviousness of a "wet battery" that varied from prior designs in two ways: It contained water, rather than the acids conventionally employed in storage batteries; and its electrodes were magnesium and cuprous chloride, rather than zinc and silver chloride. The Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result. 383 U. S., at 50–51. It nevertheless rejected the Government's claim that Adams's battery was obvious. The Court relied upon the corollary principle that when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious. *Id.*, at 51–52. When Adams designed his battery, the prior art warned that risks were involved in using the types of electrodes he employed. The fact that the elements worked together in an unexpected and fruitful manner supported the conclusion that Adams's design was not obvious to those skilled in the art.

In *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U. S. 57 (1969), the Court elaborated on this approach.

Opinion of the Court

The subject matter of the patent before the Court was a device combining two pre-existing elements: a radiant-heat burner and a paving machine. The device, the Court concluded, did not create some new synergy: The radiant-heat burner functioned just as a burner was expected to function; and the paving machine did the same. The two in combination did no more than they would in separate, sequential operation. *Id.*, at 60–62. In those circumstances, “while the combination of old elements performed a useful function, it added nothing to the nature and quality of the radiant-heat burner already patented,” and the patent failed under §103. *Id.*, at 62 (footnote omitted).

Finally, in *Sakraida v. AG Pro, Inc.*, 425 U. S. 273 (1976), the Court derived from the precedents the conclusion that when a patent “simply arranges old elements with each performing the same function it had been known to perform” and yields no more than one would expect from such an arrangement, the combination is obvious. *Id.*, at 282.

The principles underlying these cases are instructive when the question is whether a patent claiming the combination of elements of prior art is obvious. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, §103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Sakraida* and *Anderson’s-Black Rock* are illustrative—a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

Following these principles may be more difficult in other

Opinion of the Court

cases than it is here because the claimed subject matter may involve more than the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement. Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit. See *In re Kahn*, 441 F. 3d 977, 988 (CA Fed. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”). As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

B

When it first established the requirement of demonstrating a teaching, suggestion, or motivation to combine known elements in order to show that the combination is obvious, the Court of Customs and Patent Appeals captured a helpful insight. See *Application of Bergel*, 292 F. 2d 955, 956–957 (1961). As is clear from cases such as *Adams*, a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established

Opinion of the Court

functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.

Helpful insights, however, need not become rigid and mandatory formulas; and when it is so applied, the TSM test is incompatible with our precedents. The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents. The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way. In many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends. Granting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, in the case of patents combining previously known elements, deprive prior inventions of their value or utility.

In the years since the Court of Customs and Patent Appeals set forth the essence of the TSM test, the Court of Appeals no doubt has applied the test in accord with these principles in many cases. There is no necessary inconsistency between the idea underlying the TSM test and the *Graham* analysis. But when a court transforms the general principle into a rigid rule that limits the obviousness inquiry, as the Court of Appeals did here, it errs.

C

The flaws in the analysis of the Court of Appeals relate

Opinion of the Court

for the most part to the court's narrow conception of the obviousness inquiry reflected in its application of the TSM test. In determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls. What matters is the objective reach of the claim. If the claim extends to what is obvious, it is invalid under §103. One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims.

The first error of the Court of Appeals in this case was to foreclose this reasoning by holding that courts and patent examiners should look only to the problem the patentee was trying to solve. 119 Fed. Appx., at 288. The Court of Appeals failed to recognize that the problem motivating the patentee may be only one of many addressed by the patent's subject matter. The question is not whether the combination was obvious to the patentee but whether the combination was obvious to a person with ordinary skill in the art. Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.

The second error of the Court of Appeals lay in its assumption that a person of ordinary skill attempting to solve a problem will be led only to those elements of prior art designed to solve the same problem. *Ibid.* The primary purpose of Asano was solving the constant ratio problem; so, the court concluded, an inventor considering how to put a sensor on an adjustable pedal would have no reason to consider putting it on the Asano pedal. *Ibid.* Common sense teaches, however, that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a

Opinion of the Court

puzzle. Regardless of Asano's primary purpose, the design provided an obvious example of an adjustable pedal with a fixed pivot point; and the prior art was replete with patents indicating that a fixed pivot point was an ideal mount for a sensor. The idea that a designer hoping to make an adjustable electronic pedal would ignore Asano because Asano was designed to solve the constant ratio problem makes little sense. A person of ordinary skill is also a person of ordinary creativity, not an automaton.

The same constricted analysis led the Court of Appeals to conclude, in error, that a patent claim cannot be proved obvious merely by showing that the combination of elements was "obvious to try." *Id.*, at 289 (internal quotation marks omitted). When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under §103.

The Court of Appeals, finally, drew the wrong conclusion from the risk of courts and patent examiners falling prey to hindsight bias. A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning. See *Graham*, 383 U. S., at 36 (warning against a "temptation to read into the prior art the teachings of the invention in issue" and instructing courts to "'guard against slipping into the use of hindsight'" (quoting *Monroe Auto Equipment Co. v. Heckethorn Mfg. & Supply Co.*, 332 F. 2d 406, 412 (CA6 1964))). Rigid preventative rules that deny factfinders recourse to common sense, however, are neither necessary under our case law nor consistent with it.

We note the Court of Appeals has since elaborated a

Opinion of the Court

broader conception of the TSM test than was applied in the instant matter. See, e.g., *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F. 3d 1356, 1367 (2006) ("Our suggestion test is in actuality quite flexible and not only permits, but *requires*, consideration of common knowledge and common sense"); *Alza Corp. v. Mylan Labs., Inc.*, 464 F. 3d 1286, 1291 (2006) ("There is flexibility in our obviousness jurisprudence because a motivation may be found *implicitly* in the prior art. We do not have a rigid test that requires an actual teaching to combine . . ."). Those decisions, of course, are not now before us and do not correct the errors of law made by the Court of Appeals in this case. The extent to which they may describe an analysis more consistent with our earlier precedents and our decision here is a matter for the Court of Appeals to consider in its future cases. What we hold is that the fundamental misunderstandings identified above led the Court of Appeals in this case to apply a test inconsistent with our patent law decisions.

III

When we apply the standards we have explained to the instant facts, claim 4 must be found obvious. We agree with and adopt the District Court's recitation of the relevant prior art and its determination of the level of ordinary skill in the field. As did the District Court, we see little difference between the teachings of Asano and Smith and the adjustable electronic pedal disclosed in claim 4 of the Engelgau patent. A person having ordinary skill in the art could have combined Asano with a pedal position sensor in a fashion encompassed by claim 4, and would have seen the benefits of doing so.

A

Teleflex argues in passing that the Asano pedal cannot be combined with a sensor in the manner described by

Opinion of the Court

claim 4 because of the design of Asano's pivot mechanisms. See Brief for Respondents 48–49, and n. 17. Therefore, Teleflex reasons, even if adding a sensor to Asano was obvious, that does not establish that claim 4 encompasses obvious subject matter. This argument was not, however, raised before the District Court. There Teleflex was content to assert only that the problem motivating the invention claimed by the Engelgau patent would not lead to the solution of combining of Asano with a sensor. See Teleflex's Response to KSR's Motion for Summary Judgment of Invalidity in No. 02–74586 (ED Mich.), pp. 18–20, App. 144a–146a. It is also unclear whether the current argument was raised before the Court of Appeals, where Teleflex advanced the nonspecific, conclusory contention that combining Asano with a sensor would not satisfy the limitations of claim 4. See Brief for Plaintiffs-Appellants in No. 04–1152 (CA Fed.), pp. 42–44. Teleflex's own expert declarations, moreover, do not support the point Teleflex now raises. See Declaration of Clark J. Radcliffe, Ph.D., Supplemental App. 204–207; Declaration of Timothy L. Andresen, *id.*, at 208–210. The only statement in either declaration that might bear on the argument is found in the Radcliffe declaration:

“Asano . . . and Rixon . . . are complex mechanical linkage-based devices that are expensive to produce and assemble and difficult to package. It is exactly these difficulties with prior art designs that [Engelgau] resolves. The use of an adjustable pedal with a single pivot reflecting pedal position combined with an electronic control mounted between the support and the adjustment assembly at that pivot was a simple, elegant, and novel combination of features in the Engelgau '565 patent.” *Id.*, at 206, ¶16.

Read in the context of the declaration as a whole this is best interpreted to mean that Asano could not be used to

Opinion of the Court

solve “[t]he problem addressed by Engelgau '565[:] to provide a less expensive, more quickly assembled, and smaller package adjustable pedal assembly with electronic control.” *Id.*, at 205, ¶10.

The District Court found that combining Asano with a pivot-mounted pedal position sensor fell within the scope of claim 4. 298 F. Supp. 2d, at 592–593. Given the significance of that finding to the District Court's judgment, it is apparent that Teleflex would have made clearer challenges to it if it intended to preserve this claim. In light of Teleflex's failure to raise the argument in a clear fashion, and the silence of the Court of Appeals on the issue, we take the District Court's conclusion on the point to be correct.

B

The District Court was correct to conclude that, as of the time Engelgau designed the subject matter in claim 4, it was obvious to a person of ordinary skill to combine Asano with a pivot-mounted pedal position sensor. There then existed a marketplace that created a strong incentive to convert mechanical pedals to electronic pedals, and the prior art taught a number of methods for achieving this advance. The Court of Appeals considered the issue too narrowly by, in effect, asking whether a pedal designer writing on a blank slate would have chosen both Asano and a modular sensor similar to the ones used in the Chevrolet truckline and disclosed in the '068 patent. The District Court employed this narrow inquiry as well, though it reached the correct result nevertheless. The proper question to have asked was whether a pedal designer of ordinary skill, facing the wide range of needs created by developments in the field of endeavor, would have seen a benefit to upgrading Asano with a sensor.

In automotive design, as in many other fields, the interaction of multiple components means that changing one

Opinion of the Court

component often requires the others to be modified as well. Technological developments made it clear that engines using computer-controlled throttles would become standard. As a result, designers might have decided to design new pedals from scratch; but they also would have had reason to make pre-existing pedals work with the new engines. Indeed, upgrading its own pre-existing model led KSR to design the pedal now accused of infringing the Engelgau patent.

For a designer starting with Asano, the question was where to attach the sensor. The consequent legal question, then, is whether a pedal designer of ordinary skill starting with Asano would have found it obvious to put the sensor on a fixed pivot point. The prior art discussed above leads us to the conclusion that attaching the sensor where both KSR and Engelgau put it would have been obvious to a person of ordinary skill.

The '936 patent taught the utility of putting the sensor on the pedal device, not in the engine. Smith, in turn, explained to put the sensor not on the pedal's footpad but instead on its support structure. And from the known wire-chafing problems of Rixon, and Smith's teaching that "the pedal assemblies must not precipitate any motion in the connecting wires," Smith, col. 1, lines 35–37, Supplemental App. 274, the designer would know to place the sensor on a nonmoving part of the pedal structure. The most obvious nonmoving point on the structure from which a sensor can easily detect the pedal's position is a pivot point. The designer, accordingly, would follow Smith in mounting the sensor on a pivot, thereby designing an adjustable electronic pedal covered by claim 4.

Just as it was possible to begin with the objective to upgrade Asano to work with a computer-controlled throttle, so too was it possible to take an adjustable electronic pedal like Rixon and seek an improvement that would avoid the wire-chafing problem. Following similar steps to

Opinion of the Court

those just explained, a designer would learn from Smith to avoid sensor movement and would come, thereby, to Asano because Asano disclosed an adjustable pedal with a fixed pivot.

Teleflex indirectly argues that the prior art taught away from attaching a sensor to Asano because Asano in its view is bulky, complex, and expensive. The only evidence Teleflex marshals in support of this argument, however, is the Radcliffe declaration, which merely indicates that Asano would not have solved Engelgau's goal of making a small, simple, and inexpensive pedal. What the declaration does not indicate is that Asano was somehow so flawed that there was no reason to upgrade it, or pedals like it, to be compatible with modern engines. Indeed, Teleflex's own declarations refute this conclusion. Dr. Radcliffe states that Rixon suffered from the same bulk and complexity as did Asano. See *id.*, at 206. Teleflex's other expert, however, explained that Rixon was itself designed by adding a sensor to a pre-existing mechanical pedal. See *id.*, at 209. If Rixon's base pedal was not too flawed to upgrade, then Dr. Radcliffe's declaration does not show Asano was either. Teleflex may have made a plausible argument that Asano is inefficient as compared to Engelgau's preferred embodiment, but to judge Asano against Engelgau would be to engage in the very hindsight bias Teleflex rightly urges must be avoided. Accordingly, Teleflex has not shown anything in the prior art that taught away from the use of Asano.

Like the District Court, finally, we conclude Teleflex has shown no secondary factors to dislodge the determination that claim 4 is obvious. Proper application of *Graham* and our other precedents to these facts therefore leads to the conclusion that claim 4 encompassed obvious subject matter. As a result, the claim fails to meet the requirement of §103.

We need not reach the question whether the failure to

Opinion of the Court

disclose Asano during the prosecution of Engelgau voids the presumption of validity given to issued patents, for claim 4 is obvious despite the presumption. We nevertheless think it appropriate to note that the rationale underlying the presumption—that the PTO, in its expertise, has approved the claim—seems much diminished here.

IV

A separate ground the Court of Appeals gave for reversing the order for summary judgment was the existence of a dispute over an issue of material fact. We disagree with the Court of Appeals on this point as well. To the extent the court understood the *Graham* approach to exclude the possibility of summary judgment when an expert provides a conclusory affidavit addressing the question of obviousness, it misunderstood the role expert testimony plays in the analysis. In considering summary judgment on that question the district court can and should take into account expert testimony, which may resolve or keep open certain questions of fact. That is not the end of the issue, however. The ultimate judgment of obviousness is a legal determination. *Graham*, 383 U. S., at 17. Where, as here, the content of the prior art, the scope of the patent claim, and the level of ordinary skill in the art are not in material dispute, and the obviousness of the claim is apparent in light of these factors, summary judgment is appropriate. Nothing in the declarations proffered by Teleflex prevented the District Court from reaching the careful conclusions underlying its order for summary judgment in this case.

* * *

We build and create by bringing to the tangible and palpable reality around us new works based on instinct, simple logic, ordinary inferences, extraordinary ideas, and sometimes even genius. These advances, once part of our

Opinion of the Court

shared knowledge, define a new threshold from which innovation starts once more. And as progress beginning from higher levels of achievement is expected in the normal course, the results of ordinary innovation are not the subject of exclusive rights under the patent laws. Were it otherwise patents might stifle, rather than promote, the progress of useful arts. See U. S. Const., Art. I, §8, cl. 8. These premises led to the bar on patents claiming obvious subject matter established in *Hotchkiss* and codified in §103. Application of the bar must not be confined within a test or formulation too constrained to serve its purpose.

KSR provided convincing evidence that mounting a modular sensor on a fixed pivot point of the Asano pedal was a design step well within the grasp of a person of ordinary skill in the relevant art. Its arguments, and the record, demonstrate that claim 4 of the Engelgau patent is obvious. In rejecting the District Court's rulings, the Court of Appeals analyzed the issue in a narrow, rigid manner inconsistent with §103 and our precedents. The judgment of the Court of Appeals is reversed, and the case remanded for further proceedings consistent with this opinion.

It is so ordered.

United States Court of Appeals for the Federal Circuit

06-1402

LEAPFROG ENTERPRISES, INC.,

Plaintiff-Appellant,

v.

FISHER-PRICE, INC. and MATTEL, INC.,

Defendants-Appellees.

Ron E. Shulman, Wilson Sonsini Goodrich & Rosati, of Palo Alto, California, argued for plaintiff-appellant. With him on the brief were Terry Kearney and Michael A. Berta.

James Galbraith, Kenyon & Kenyon LLP, of New York, New York, argued for defendants-appellees. With him on the brief were Richard L. DeLucia and John Flock; and John R. Hutchins, of Washington, DC. Of counsel was Jeffrey M. Butler, of New York, New York.

Appealed from: United States District Court for the District of Delaware

Judge Gregory M. Sleet

United States Court of Appeals for the Federal Circuit

06-1402

LEAPFROG ENTERPRISES, INC.,

Plaintiff-Appellant,

v.

FISHER-PRICE, INC. and MATTEL, INC.,

Defendants-Appellees.

DECIDED: May 9, 2007

Before MAYER, LOURIE, and DYK, Circuit Judges.

LOURIE, Circuit Judge.

Leapfrog Enterprises, Inc. ("Leapfrog") appeals from the order of the United States District Court for the District of Delaware entering judgment of noninfringement and invalidity of claim 25 of Leapfrog's U.S. Patent 5,813,861 ("the '861 patent") in favor of Fisher-Price, Inc. and Mattel, Inc. (collectively "Fisher-Price"). We affirm.

BACKGROUND

Leapfrog filed suit in October 2003, alleging that Fisher-Price's PowerTouch product infringed claim 25 of the '861 patent. Leapfrog amended the complaint to add

Mattel, Inc. as a codefendant in September 2004. The '861 patent relates to a learning device to help young children read phonetically. Claim 25 reads as follows:

An interactive learning device, comprising:

a housing including a plurality of switches;
a sound production device in communication with the switches and including a processor and a memory;
at least one depiction of a sequence of letters, each letter being associative with a switch; and
a reader configured to communicate the identity of the depiction to the processor,

wherein selection of a depicted letter activates an associated switch to communicate with the processor, causing the sound production device to generate a signal corresponding to a sound associated with the selected letter, the sound being determined by a position of the letter in the sequence of letters.

'861 patent, col.10 ll.23-36.

In an April 7, 2005 Order, the trial court construed a number of terms from claim 25 of the patent. The court construed the phrase "selection of a depicted letter" to mean "choosing a particular depicted letter from the depicted sequence of letters by contacting or coming into proximity to that particular depicted letter." Leapfrog Enters., Inc. v. Fisher-Price, Inc., No. 03-927 (D. Del. Apr. 7, 2005).

The accused PowerTouch device consists of a hinged plastic housing containing electronics and a speaker that opens to lie flat. When so opened, a user places a book made for use with the device in a rectangular recess in the housing. The books contain large, colorful pictures that also show words associated with the objects shown in those pictures. The user may select one of multiple modes of operation. In phonics mode, when the user touches one of the words on the page, the device pronounces the word, then pronounces each phoneme of the word in sequence, and finally pronounces the

entire word again. The device relies on a grid of "crosspoints" located in the area underneath where the books are placed to detect the location on the page being touched by the user. The processor in the device may be programmed to associate a particular response with each crosspoint. Some of the words on the pages of the books are large enough that each letter of the word corresponds to a separate crosspoint. However, the phonics mode operates in the same manner for those words, with pronunciation of the word, the phonemes, and the word again, regardless which letter the user touches because each letter has been associated with the same response in the device's programming.

The case proceeded to trial, but the jury deadlocked on May 27, 2005. The parties stipulated that the case would be submitted to the trial court for decision, based on the record and the rulings made by the court at the time the case was submitted to the jury.

The trial court issued its decision on March 30, 2006, finding claim 25 of the '861 patent not infringed and invalid as obvious. The court found that the accused PowerTouch device could not practice the "selection of a depicted letter" because it only allowed selection of words rather than letters. The court thus found that the PowerTouch did not infringe claim 25. The court also concluded that claim 25 was invalid as obvious in view of the combination of U.S. Patent 3,748,748 to Bevan, the Texas Instruments Super Speak & Read ("SSR") device, and the knowledge of one of ordinary skill in the art as represented by the testimony of Fisher-Price's technical expert, Ronald Milner.

Leapfrog timely appealed. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

DISCUSSION

A. Noninfringement

The district court's determination of infringement is a question of fact that we review for clear error. Abraxis Bioscience, Inc. v. Mayne Pharm. (USA) Inc., 467 F.3d 1370, 1375 (Fed. Cir. 2006). "Under the clear error standard, the court's findings will not be overturned in the absence of a definite and firm conviction that a mistake has been made." Impax Labs., Inc. v. Aventis Pharm. Inc., 468 F.3d 1366, 1375 (Fed. Cir. 2006) (quotation omitted).

On appeal, Leapfrog does not challenge the district court's construction of the phrase "selection of a depicted letter," but argues that the court clearly erred in applying that construction to the facts of the case. More specifically, Leapfrog argues that the PowerTouch does allow "choosing a particular depicted letter" because in at least some cases each letter of a word corresponds to a separate crosspoint. Thus, the fact that the response of the device is the same, no matter which letter the user touches, is irrelevant because the user may still choose particular letters.

Fisher-Price also does not challenge the district court's claim construction, and Fisher-Price responds that the district court correctly determined that selection by choosing a particular letter is only meaningful if making one letter choice results in an outcome different from making a different letter choice. Fisher-Price argues that the district court correctly found that only the word can be selected if the choice of letter, within a particular word, is irrelevant to the response of the device.

We find no clear error in the district court's application of the claim to the essentially undisputed facts of this case. The court's conclusion that the Fisher-Price PowerTouch only allows selection of a word rather than "a depicted letter" comports with its construction of "selection" to mean "choosing." The ordinary meaning of choice requires that the alternatives from which the choice is made will result in different possible outcomes. With the PowerTouch device, the same outcome results no matter which letter in the word the user touches. This understanding is also consistent with the way that selection of a depicted letter is described in the patent.

Every time the child depresses a letter key, the book will recite the phoneme of the letter associated with that letter, in the context that the letter is used in the word or phrase depicted on the card, here "ball." Thus, for the example where the subject is "ball" as shown if the child depresses the correct letter key of "b" the processor will sound the phoneme "b" as "b" is pronounced in "ball."

'861 patent, col.6 ll.17-23. Most importantly, this understanding of selection is also most consistent with the language of claim 25 itself. The PowerTouch device does not generate a signal corresponding to a sound associated with the selected letter, as the claim requires. A signal corresponding to a word is not the same as a signal corresponding to a letter. If the claim were meant to encompass a device that always enunciates all the letters of a word no matter which letter was selected, the claim language requiring that "the sound be[] determined by a position of the letter in the sequence of letters" would be superfluous because no such determination would be necessary.

Leapfrog comes well short of supporting a definite and firm conviction that a mistake has been made, and we therefore affirm the district court's entry of judgment of noninfringement in favor of Fisher-Price.

B. Obviousness

"Obviousness is a question of law, reviewed de novo, based upon underlying factual questions which are reviewed for clear error following a bench trial." Alza Corp. v. Mylan Labs., Inc., 464 F.3d 1286, 1289 (Fed. Cir. 2006) (citing Ruiz v. A.B. Chance Co., 357 F.3d 1270, 1275 (Fed. Cir. 2004)).

Leapfrog argues that the district court engaged in improper hindsight in reaching its conclusion of obviousness by concluding that all of the limitations of the claim are found in the prior art. Leapfrog also argues that the court's finding that the Bevan device has the same functionality as claim 25 was clearly erroneous because the components of Bevan's device are mechanical, and thus different in structure and interrelation from the electronic components described in claim 25, and therefore cannot provide the same functionality. Leapfrog argues that there was inadequate evidence in the record to support a motivation to combine Bevan, the Texas Instruments SSR, and a reader to arrive at the invention of claim 25. Finally, Leapfrog argues that the district court did not properly consider the strong evidence of secondary considerations of nonobviousness.

In response, Fisher-Price argues that claim 25 is nothing more than the Bevan device, a toy that teaches reading based on the association of letters with their phonemic sounds, updated with modern electronics that were common by the time of the alleged invention. Fisher-Price also responds that particularized and specific motivations to combine need not be found in the prior art references themselves in the context of an improvement that arises from a desire to generally improve a known device (e.g., to make the product smaller, lighter, or less expensive) using newer

technology. Finally, Fisher-Price argues that the district court did give proper consideration to secondary considerations of nonobviousness, but simply concluded that those considerations were not sufficient to overcome the determination of obviousness based on primary considerations.

We agree with Fisher-Price that the district court correctly concluded that the subject matter of claim 25 of the '861 patent would have been obvious in view of the combination of Bevan, the SSR, and the knowledge of one of ordinary skill in the art. An obviousness determination is not the result of a rigid formula disassociated from the consideration of the facts of a case. Indeed, the common sense of those skilled in the art demonstrates why some combinations would have been obvious where others would not. See KSR Int'l Co. v. Teleflex Inc., 550 U.S. __, 2007 WL 1237837, at *12 (2007) ("The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results."). Thus, we bear in mind that the goal of the claim 25 device was to allow a child to press a switch associated with a single letter in a word and hear the sound of the letter as it is used in that word. In this way, the child would both associate the sound of the letter with the letter itself and be able to sound out the word one letter at a time to learn to read phonetically. Accommodating a prior art mechanical device that accomplishes that goal to modern electronics would have been reasonably obvious to one of ordinary skill in designing children's learning devices. Applying modern electronics to older mechanical devices has been commonplace in recent years.

The Bevan patent was one of the pieces of prior art relied upon by the district court, and it describes an electro-mechanical learning toy. In the preferred embodiment

of the Bevan device, a housing contains a phonograph record as a voice storage means, a speaker for playing sounds from the voice storage means, and an actuated electric motor to turn the record. Uniquely shaped puzzle pieces fit into correspondingly shaped openings in the top of the housing. Depressing the puzzle pieces in the openings causes the motor to turn the record and brings phonographic needles into contact with the portions of the record where the sounds associated with the puzzle pieces are stored so that they can be played through the speaker. In one embodiment, each puzzle piece is imprinted with one letter from a word, and pressing each puzzle piece produces the sound of a single letter in that word. Thus, although it relies on an electric motor and mechanical structures rather than a processor and related electronics, Bevan teaches an apparatus that achieves the goals described above of associating letters with their sounds and encouraging children to sound out words phonetically through a similar type of interaction. We therefore see no clear error in the district court's finding that the Bevan device has the same method of operation, viewed as a whole, as claim 25 of Leapfrog's '861 patent.

A second piece of prior art relied upon by the district court was the Texas Instruments SSR. The SSR is a more modern type of prior art learning toy, constructed with electronic components, that has a slightly different mode of operation than Bevan. The SSR has a hinged plastic housing that opens to lie flat. Books for use with the toy fit into a recess in the housing. The housing contains switches that can detect when a child presses on different areas of the books' pages. The housing also contains a processor, memory, and a speaker to produce sounds. In one mode of operation, the SSR allows the child to press the first letter of a word and hear the sound of that letter.

The remainder of the letters in the word are grouped together and played together. For example, the child can press the letter "t" and hear the t phoneme and then press "ug" to hear all the sounds in the word "tug." Similarly, the child can press the letter "b" and then "ug" to hear the sounds in "bug." The SSR does not include a reader that allows the processor to automatically identify the inserted book. Instead, the user can press a triangle printed on the first page of the book, and the processor determines from the location of the triangle printed on the page which book is inserted. Similarly, the user can press a star on each page of the book, and the processor determines from the location of the star on the page which page of the book is being viewed. Thus, the SSR provides a roadmap for one of ordinary skill in the art desiring to produce an electronics-based learning toy for children that allows the use of phonetic-based learning methods, including the association of individual letters with their phonemes.

We agree with the district court that one of ordinary skill in the art of children's learning toys would have found it obvious to combine the Bevan device with the SSR to update it using modern electronic components in order to gain the commonly understood benefits of such adaptation, such as decreased size, increased reliability, simplified operation, and reduced cost. While the SSR only permits generation of a sound corresponding to the first letter of a word, it does so using electronic means. The combination is thus the adaptation of an old idea or invention (Bevan) using newer technology that is commonly available and understood in the art (the SSR). We therefore also find no clear error in the finding of the district court that one of ordinary skill in the art could have utilized the electronics of the SSR device, with the method of

operation taught by Bevan, to allow a child to press each individual letter in a word and hear the individual phonemes associated with each letter to sound out the words.

This combination of Bevan and the SSR lacks only the “reader” of claim 25 of the ’861 patent. The district court found that readers were well-known in the art at the time of the invention. As there is ample evidence in the record to support that finding, we find no clear error in the court’s determination. Furthermore, the reasons for adding a reader to the Bevan/SSR combination are the same as those for using readers in other children’s toys—namely, providing an added benefit and simplified use of the toy for the child in order to increase its marketability. Leapfrog presents no evidence that the inclusion of a reader in this type of device was uniquely challenging or difficult for one of ordinary skill in the art. See KSR, 2007 WL 1237837, at *15. Nor does Leapfrog present any evidence that the inclusion of a device commonly used in the field of electronics (a reader), and even in the narrower art of electronic children’s toys, represented an unobvious step over the prior art. Our conclusion is further reinforced by testimony from the sole inventor at trial that he did not have a technical background, could not have actually built the prototype himself, and relied on the assistance of an electrical engineer and Sandia National Laboratory to build a prototype of his invention.

Finally, we do not agree with Leapfrog that the court failed to give proper consideration to secondary considerations. The district court explicitly stated in its opinion that Leapfrog had provided substantial evidence of commercial success, praise, and long-felt need, but that, given the strength of the *prima facie* obviousness showing, the evidence on secondary considerations was inadequate to overcome a final

conclusion that claim 25 would have been obvious. We have no basis to disagree with the district court's conclusion.

In light of our review of the evidence and the lack of any clear error in the district court's factual findings, we agree with the district court's conclusion that claim 25 of the '861 is invalid as obvious in view of the combination of Bevan, the SSR device, and the knowledge of one of ordinary skill in the art concerning readers.

CONCLUSION

For the reasons stated, we affirm the district court's grant of judgment that Fisher-Price's PowerTouch device does not infringe claim 25 of the '861 patent and that claim 25 of the '861 patent is invalid as obvious.

AFFIRMED

United States Court of Appeals for the Federal Circuit

2006-1573
(Reexamination No. 90/005,117)

IN RE ICON HEALTH AND FITNESS, INC.

Larry R. Laycock, Workman Nydegger, of Salt Lake City, Utah, argued for appellant. With him on the brief was William R. Richter.

Robert J. McManus, Associate Solicitor, Office of the Solicitor, United States Patent and Trademark Office, of Arlington, Virginia, argued for the director of the United States Patent and Trademark Office. With him on the brief were John M. Whealan, Solicitor and William LaMarca, Associate Solicitor.

Appealed from: United States Patent and Trademark Office, Board of Patent Appeals and Interferences

United States Court of Appeals for the Federal Circuit

2006-1573
(Reexamination No. 90/005,117)

IN RE ICON HEALTH AND FITNESS, INC.

DECIDED: August 1, 2007

Before MAYER, SCHALL, and PROST, Circuit Judges.

PROST, Circuit Judge.

ICON Health & Fitness, Inc. ("Icon") appeals from a decision by the Board of Patent Appeals and Interferences ("Board") during reexamination of Icon's U.S. Patent No. 5,676,624 ("the '624 patent"). Ex parte ICON Health & Fitness, Reexam. No. 90/005,117, Appeal No. 2006-0790 (B.P.A.I. May 16, 2006) ("Board Decision"). Finding no error in the Board's decision, we affirm its decision holding Icon's claims unpatentable as obvious.

BACKGROUND

Icon owns the '624 patent, issued October 14, 1997, and sought reexamination by the Patent and Trademark Office ("PTO"). The '624 patent claims a treadmill with a

folding base, allowing the base to swivel into an upright storage position. Claim 1, from which all other claims on appeal depend, recites:

1. A treadmill comprising:

support structure having a base for stably positioning on a support surface to be free standing and having upright structure extending upwardly from said base;

a tread base having a frame that includes a front, a rear, a left side, a right side and an endless belt positioned between said left side and said right side, said frame being connected to said support structure to be moveable about an axis of rotation spaced from said front toward said rear between a first position in which said endless belt is position[ed] for operation by a user positioned thereon and a second position in which said rear of said frame is positioned toward said support structure;

handle means associated with said support structure positioned for grasping by a user for moving said support structure with said tread base in said second position between a use position in which said support structure has said base positioned on said support surface for stably positioning said support structure on a support surface and a moving position in which said support structure is rotatably displaced from said use position;

roller means adapted to said base for engagement with said support surface when said support structure is reoriented to said moving position for movement of said support structure by the user on said support surface; and

a gas spring connected between the tread base and the upright structure to assist in stably retaining said tread base in said second position relative to said upright structure with said tread base in said second position.

(emphasis added).

The present dispute involves only the final limitation, requiring a gas spring "to assist in stably retaining" the tread base in the upright position. On reexamination, the examiner rejected Icon's claims as obvious under 35 U.S.C. § 103, based on the combination of an advertisement by Damark International, Inc. ("Damark") and U.S. Patent No. 4,370,766 to Teague, Jr. ("Teague").

Damark consists of an advertisement for a folding treadmill; Icon does not challenge the Board's finding that Damark demonstrates all claim elements other than the gas spring. The present inquiry, therefore, focuses on Teague's disclosure of gas springs and the applicability of Teague to Icon's invention. Teague describes a bed that folds up into a cabinet or recess. It purports to improve on prior art counterbalancing mechanisms by using a novel dual-action spring rather than the prior single-action springs. Single-action springs provide a force pushing the bed closed at all times. Teague's dual-action spring, on the other hand, reverses its force as the mechanism passes a neutral position; the neutral position in Teague occurs when the center of gravity of the bed aligns vertically with the pivot point. As the bed moves past the neutral position to the closed position, the mechanism opposes continued motion. The bed moves into the closed position under the pull of gravity. When fully closed, therefore, the mechanism in Teague provides an opening force, but not one sufficient to counteract the force of gravity. Essentially, Teague's dual-action spring partially supports the weight of the bed in both the closed and open positions. This provides the benefit of reducing the force required to open the bed from the closed position, while still reducing the force required to lift the bed from the open position.

The Board affirmed the examiner's determination that the combination of Teague and Damark rendered claim 1 obvious. First, the Board rejected Icon's argument that Teague does not provide analogous art. Specifically, because Teague and the current application both address the need to stably retain a folding mechanism, the Board found Teague reasonably pertinent to the current application. Further, it found that discussion

of a lifting force in the present application paralleled Teague's mechanism for creating a lifting force.

Next, the Board looked to the broad scope of the appealed claims and held that Teague's teachings fell within that broad scope. In particular, because claim 1 "does not limit the degree or manner in which the gas spring 'assist[s] in stably retaining' the tread base at the storage position," the broad claim scope could encompass the solution provided by Teague. Board Decision, slip op. at 24. The Board criticized Icon's failure to provide any record evidence beyond attorney argument and thus read the claim as covering Teague's mechanism. Concluding, the Board held claims 1–3 and 10–12 obvious in light of Damark and Teague.

Because Icon did not dispute that an additional reference, U.S. Patent No. 4,913,396 to Dalebout et al. ("Dalebout"), disclosed all additional limitations in claims 4–9, the Board further affirmed the examiner's rejection of those claims as obvious. The Board, however, reversed the examiner's rejection of claim 13, rejecting the conclusion of obviousness.

Icon timely appealed to this court, challenging both the use of Teague as analogous art and the ultimate conclusion of obviousness. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4).

DISCUSSION

Although based on determinations of underlying facts, which we review for substantial evidence, the ultimate conclusion of obviousness is a legal question, which we review de novo. In re Gartside, 203 F.3d 1305, 1316 (Fed. Cir. 2000). Underlying facts include the scope and content of the prior art, the level of ordinary skill in the art at

the time of the invention, objective evidence of nonobviousness, and differences between the prior art and the claimed subject matter. Graham v. John Deere Co. of Kansas City, 383 U.S. 1, 17–18 (1966). The Board’s determination that a prior art reference is analogous art also presents an issue of fact, reviewed for substantial evidence. See In re Paulsen, 30 F.3d 1475, 1481 (Fed. Cir. 1994).

We initially consider the proper claim meaning and scope. Amazon.com, Inc. v. Barnesandnoble.com, Inc., 239 F.3d 1343, 1351 (Fed. Cir. 2001). Although neither the Board nor Icon specifically argues for any particular construction of the gas spring limitation, each party’s obviousness argument turns on the breadth of that limitation. During reexamination, as with original examination, the PTO must give claims their broadest reasonable construction consistent with the specification. In re Am. Acad. of Sci. Tech Ctr., 367 F.3d 1359, 1364 (Fed. Cir. 2004). Therefore, we look to the specification to see if it provides a definition for claim terms, but otherwise apply a broad interpretation. As this court has discussed, this methodology produces claims with only justifiable breadth. In re Yamamoto, 740 F.2d 1569, 1571 (Fed. Cir. 1984). Further, as applicants may amend claims to narrow their scope, a broad construction during prosecution creates no unfairness to the applicant or patentee. Am. Acad., 367 F.3d at 1364.

The claims at issue recite “a gas spring . . . to assist in stably retaining said tread base.” As the Board noted, “claim 1 does not limit the degree or manner in which the gas spring” assists in stably retaining. Board Decision, slip op. at 24. Icon, without arguing for any particular construction, takes the position that the gas spring must

provide a force continuing to urge the mechanism closed when in the closed position. The specification of the '624 patent provides only minimal discussion of the gas springs. It describes a "lift assistance assembly," which in the illustrated embodiment includes a gas spring to provide force to at least partially support the weight of the tread base. '624 patent, col. 15, ll. 3–25. When claiming the gas spring, the application makes no reference to lift assistance, only stable retention of the tread base.

The specification provides little further regarding a definition of "stably retain." It describes the treadmill's folding action, such that the center of gravity of the tread base passes over the pivot point to "stably retain" the base. Id. at col. 12, ll. 30–34. Accordingly, gravity creates a stable closed position; the gas spring claimed must only "assist" in stably retaining the tread base. Because Icon could have amended its claims to more clearly define "stably retain" and did not do so, it now must submit to the Board's interpretation. With little guidance from the specification, the Board's construction properly represents the broadest reasonable construction. Although the Board did not set out the specific construction for Icon's claim, it did so to the extent required. Indeed, an infringement or invalidity analysis provides the context for claim construction. See Wilson Sporting Goods Co. v. Hillerich & Bradsby Co., 442 F.3d 1326–27 (Fed. Cir. 2006). We therefore analyze the Board's factual findings and conclusion of obviousness while considering that Icon's claims encompass everything reasonably seen to assist in stably retaining the tread base.

II

A

Icon disputes the Board's conclusion that one skilled in the art would have found it obvious to combine the teachings of Teague and Damark. As the first of its two major arguments on appeal, Icon argues that Teague falls outside the "treadmill art" and addresses a different problem than the present application, removing it from the relevant prior art. We agree that, describing a folding bed, Teague comes from a different field than Icon's application. We disagree, however, that Teague addresses a different problem.

If reasonably pertinent to the problem addressed by Icon, Teague may serve as analogous art. Paulsen, 30 F.3d at 1481. "A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem." In re Clay, 966 F.2d 656, 659 (Fed. Cir. 1992). In other words, "familiar items may have obvious uses beyond their primary purposes." KSR Int'l Co. v. Teleflex, Inc., 127 S. Ct. 1727, 1742 (2007). We therefore have concluded, for example, that an inventor considering a hinge and latch mechanism for portable computers would naturally look to references employing other "housings, hinges, latches, springs, etc.," which in that case came from areas such as "a desktop telephone directory, a piano lid, a kitchen cabinet, a washing machine cabinet, a wooden furniture cabinet, or a two-part housing for storing audio cassettes." Paulsen, 30 F.3d at 1481–82.

Icon's invention provides a treadmill with a folding mechanism and a means for retaining that mechanism in the folded position. The application specifically discusses the gas spring as part of a "lift assistance assembly . . . to apply a force or torque urging the tread base" towards the closed position. '624 patent, col. 15, ll. 3–5. Nothing about Icon's folding mechanism requires any particular focus on treadmills; it generally addresses problems of supporting the weight of such a mechanism and providing a stable resting position. Analogous art to Icon's application, when considering the folding mechanism and gas spring limitation, may come from any area describing hinges, springs, latches, counterweights, or other similar mechanisms—such as the folding bed in Teague. Accordingly, we conclude that substantial evidence supports the Board's finding that Teague provides analogous art.

B

Several factors support the Board's conclusion of obviousness. When analyzing Icon's application, we consider a variety of sources that may have led one skilled in the art to combine the teachings of Damark and Teague. Indeed, "any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." KSR, 127 S. Ct. at 1742.

First, Teague discusses prior art, single-action coil springs that always push the bed towards the closed position. As Teague recites, in those beds, "the coil springs also exert forces holding the bed in the fully closed position." Teague, col. 1, ll. 51–55. Such springs, in this application, would produce a force always urging the tread base towards the closed position—exactly the type of mechanism that Icon argues its claims

require. While the passage concerns coil springs rather than gas springs, Teague explicitly discusses the interchangeability of gas springs and coil springs. Teague, col. 3, ll. 61–65. Therefore, Teague provides an example of a mechanism clearly satisfying Icon's claim limitation.

Next, Icon's application discusses the gas spring in connection with a "lift assistance assembly." '624 patent, col. 15, ll. 3–25. Similarly, Teague is directed at a "counterbalancing mechanism," intended to support the weight of a bed as it opens and closes. Teague, col. 1, ll. 5–34. One skilled in the art would naturally look to prior art addressing the same problem as the invention at hand, and in this case would find an appropriate solution. Indeed, while perhaps not dispositive of the issue, the finding that Teague, by addressing a similar problem, provides analogous art to Icon's application goes a long way towards demonstrating a reason to combine the two references. Because Icon's broad claims read on embodiments addressing that problem as described by Teague, the prior art here indicates a reason to incorporate its teachings.

Finally, Teague provides a mechanism such that the bed "has two stable rest positions." Teague, col. 1, ll. 35–38. It describes, "as the center of gravity of the bed passes over the pivot axis . . . gravity tends to hold the bed in its fully closed position." Teague, col. 1, ll. 47–51. When folding the treadmill described in Icon's application, "[t]he tread base 434 is rotated until the center of gravity 440 is displaced clockwise past the vertical 446 a distance 448 selected to stably retain the tread base 434 in the second position." '624 patent, col. 12, ll. 29–32. The striking similarity between Icon's application and Teague clearly illustrates the similarity of problems they address and

solutions to that problem, further supporting the idea that one skilled in the art would combine Teague with Damark.

The aforementioned connections between Teague and Icon's application provide a sufficient basis to conclude that one skilled in the art would combine the teachings of Teague and Damark. Icon, however, argues that, rather than directing one skilled in the art towards Icon's claims, Teague teaches away from Icon's invention. Icon's teaching away argument takes two forms: (1) that Teague specifically directs one skilled in the art not to use single-action springs; and (2) that Teague does not satisfy the claim limitations, i.e., that the dual-action springs it teaches would render Icon's invention inoperable. We reject this argument.

"A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." In re Gurley, 27 F.3d 551, 553 (Fed. Cir. 1994); see KSR, 127 S. Ct. at 1739–40 (explaining that when the prior art teaches away from a combination, that combination is more likely to be nonobvious). Additionally, a reference may teach away from a use when that use would render the result inoperable. McGinley v. Franklin Sports, Inc., 262 F.3d 1339, 1354 (Fed. Cir. 2001).

Contrary to Icon's argument, the passage in Teague describing single-action springs does not indicate the undesirability of those springs for Icon's application. At most, Teague only teaches away from single-action springs in the context of decreasing the opening force. Icon argues that the gas spring limitation in its application must increase the opening force provided by gravity. As Icon recognizes, Teague instructs

that single-action springs provide exactly that result. Indeed, “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” KSR, 127 S. Ct. at 1739. Accordingly, Teague does not teach away from using single-action springs in Icon’s invention.

Icon next asserts that the dual-action mechanism disclosed in Teague provides exactly the wrong type of force for Icon’s purpose, rendering the combination inoperable. As we have discussed, Icon’s argument may have carried some weight with more narrow claims, which it could have obtained by amendment. But faced with broad claims encompassing anything that assists in stably retaining the tread base, we reject Icon’s argument. While Icon’s claim would also read on a mechanism providing a consistent closing force (a single-action spring), one skilled in the art could view the Teague mechanism (a dual-action spring) as assisting in stably retaining the tread base, just as it creates a stable rest position for the bed in Teague. See Teague, col. 1, ll. 35–38 (describing the invention as “an improved counterbalance mechanism in combination with a bed, whereby the bed has two stable rest positions”).

Finally, Icon argues that the counterweight mechanism from Teague uses a large spring that would overpower Icon’s treadmill mechanism, thus producing a result inoperable for its intended purpose. Icon correctly states the principle that a reference teaches away from a combination when using it in that combination would produce an inoperative result. See McGinley, 262 F.3d at 1354. But we do not ignore the modifications that one skilled in the art would make to a device borrowed from the prior art. Optivus Tech., Inc. v. Ion Beam Applications, S.A., 469 F.3d 978, 989–90 (Fed. Cir.

2006). One skilled in the art would size the components from Teague appropriately for Icon's application, therefore producing an embodiment meeting Icon's claims.

Therefore, Icon's arguments fail to convince us that Teague teaches away from Icon's claims. Teague discloses two types of mechanism that would satisfy Icon's gas spring limitation, and does not indicate the undesirability or unsuitability of either mechanism for Icon's purpose. To the contrary, one skilled in the art would naturally look to Damark and Teague, finding reason to combine them; forming that combination would produce a device meeting all of Icon's claim limitations.

CONCLUSION

Because we find no error in the Board's factual finding or legal conclusions, we affirm its decision holding claims 1–3 and 10–12 unpatentable as obvious in light of Damark and Teague, and claims 4–9 unpatentable in light of Damark, Teague, and Dalebout.

AFFIRMED



UNITED STATES PATENT AND TRADEMARK OFFICE

HFS/AHS

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/893,143	06/27/2001	Antti Kansakoski	871.0014.USU	4012
29683	7590	03/08/2007	EXAMINER	
HARRINGTON & SMITH, PC			ETTEHADIEH, ASLAN	
4 RESEARCH DRIVE			ART UNIT	PAPER NUMBER
SHELTON, CT 06484-6212			2611	
SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE		
3 MONTHS	03/08/2007	PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

US ACTION 5/8/07 - 2 mo.
DUE DATE 6/8/07 - 3 mo.
PAPER DATED 3/8/2007
OA FINAL 9/8/07
MSG PT DWG
APPEAL ISSUE FEE
OTHER _____

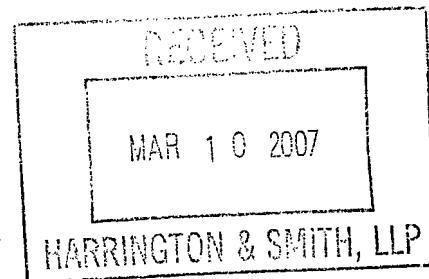


Exhibit H

SY

Office Action Summary	Application No.	Applicant(s)
	09/893,143	KANSAKOSKI ET AL.
Examiner	Art Unit	
Aslan Ettehadieh	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 12 February 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-6,8-12,14-19,21-24 and 26-33 is/are rejected.
- 7) Claim(s) 7,13,20 and 25 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 12 February 2006 is/are: a) accepted or b) objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 02/12/2007 have been fully considered but they are not persuasive.
2. Applicant's arguments regarding claims 1, 9, 15, 16, 26, and 30, *Yun is from an unrelated field as compared to instant application*. In response to applicant's argument that Yun is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Applicants field is a CDMA receiver as shown in the abstract, figure 1, and also in all the claims, i.e. "A code division, multiple access (CDMA) receiver" (claim 1). Yun discloses a CDMA receiver as shown in figure 5, col. 2 lines 23 – 24.
3. Applicant's arguments regarding claims 1, 9, 15, 16, 26, and 30, *Kang is from an unrelated field as compared to instant application*. In response to applicant's argument that Yun is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Applicants field is a CDMA receiver as shown in the abstract, figure 1, and also in all the claims, i.e. "A code division, multiple

access (CDMA) receiver" (claim 1). Kang discloses a CDMA receiver as shown in figure 2, paragraphs 2, 4, and 5.

4. Applicant's arguments regarding claims 1, 9, 15, 16, 26, and 30, *Kang does not disclose "instantaneous total received power*. Yun discloses an instantaneous total received power (col. 12 lines 42 – 48, col. 38 lines 1 – 10, 44 – 51, col. 39 lines 50 – 60).

5. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to combine Kang with Yun is found in paragraph 13 of the Kang reference, "...allows unnecessary retrieval operations to be avoided..."

6. Applicant's arguments regarding claims 1, 9, 15, 16, 26, and 30, *Ohno deos not disclose a value*. Contrary to applicant's assertion, Ohno discloses a signal c, which is being interpreted as a value because a signal will have a value (some type of measure, i.e. voltage) and when the signal c is not present (i.e. a null value) the function of the component will not be changed/adjusted.

7. Applicant's arguments regarding claims 1, 9, 15, 16, 26, and 30, *Ohno is from an unrelated field as compared to instant application*. In response to applicant's argument

that Yun is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Applicants field is a CDMA receiver as shown in the abstract, figure 1, and also in all the claims, i.e. "A code division, multiple access (CDMA) receiver" (claim 1). Ohno discloses a CDMA receiver as shown in the title and abstract.

8. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to combine Ohno with Yun is found in paragraph 15 of the Ohno reference, "...reducing power consumption..."

9. Applicant's arguments regarding claim 15, *Ohno does not disclose using a maximum value of lo to identify one of m segments of the searcher buffer on which a searcher is to be enabled for operation*". Contrary to applicant's assertion, the combination of Yun in view of Kang in further view of Ohno teaches all the limitations of claim 15. Kang discloses using a maximum value to identify one of m segments of the

searcher buffer on which a searcher is to be enabled for operation (figure 4, paragraphs 13, 24, 25, 37, 39, 40; where Kang is not explicit about to identify one of m segments of the searcher buffer). Ohno discloses to identify one of m segments of the searcher buffer (paragraphs 44 – 45, 54, figures 3, 7).

10. Applicant's arguments regarding claim 4, *Ohno does not disclose a buffer for storing I/Q samples*. Contrary to applicant's assertion, the combination of Yun in view of Kang in further view of Ohno teaches all the limitations of claim 4. Yun further discloses wherein said searcher comprises a searcher buffer for storing Inphase and Quadrature (I/Q) samples (col. 37 line 15 – col. 38 line 54). Kang further discloses wherein said searcher comprises a searcher buffer for storing Inphase and Quadrature (I/Q) samples, and wherein said searcher is storing I/Q samples into said buffer (paragraphs 9, 10, 32).

Allowable Subject Matter

11. Claims 7, 13, 20, 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 4 – 5, 8 – 9, 14 – 16, 19, 21, 24, 26, 29 – 30, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yun (US 6463295) in view of Kang et al. (US 2002/0181632) in further view of Ohno (US 2001/0009562).

13. Regarding claim 1, Yun discloses a code division, multiple access (CDMA) receiver, comprising: an RF section for receiving a CDMA signal (figure 5, col. 1 lines 15 – 41, col. 2 lines 23 – 24); a circuit for determining an instantaneous total received power (I_o) of the received CDMA signal (col. 12 lines 42 – 48, col. 38 lines 1 – 10, 44 – 51, col. 39 lines 50 – 60). Yun does not disclose a searcher that is one of enabled for operation or disabled from operation in accordance with a value.

In the same field of endeavor, however, Kang discloses a searcher that is one of enabled for operation or disabled from operation (paragraphs 13, 39, 40). Kang also shows an RF section for receiving a CDMA signal (paragraph 4) and a circuit for determining a total received power of the received CDMA signal (figure 2 elements 32 – 34, paragraph 10). Also, Kang does not explicitly specify instantaneous however the total received power (I_o) would be the energy result of I^2+Q^2 .

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use a searcher that is one of enabled for operation or disabled from operation as taught by Kang in the system of Yun to allow the system to perform efficiently and to avoid unnecessary operations (paragraph 13).

In the same field of endeavor, however, Ohno discloses a searcher that is one of enabled for operation or disabled from operation in accordance with a value

(paragraphs 44 – 45, 54, figures 3, 7; where the signal c is being interrupted as a value).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use a searcher that is one of enabled for operation or disabled from operation in accordance with a value as taught by Ohno in the system of Yun to reduce power consumption in a receiver (paragraph 15).

14. Regarding claim 9, the steps claimed as method is nothing more than restating the function of the specific components of the apparatus as claim 1 above and therefore, it is rejected as in considering the aforementioned rejection for the apparatus claim 1.

15. Regarding claim 26, Yun discloses all limitations of claim 26 as analyzed in claim 1 above.

16. Regarding claim 30, the steps claimed as method is nothing more than restating the function of the specific components of the apparatus as claim 26 above and therefore, it is rejected as in considering the aforementioned rejection for the apparatus claim 26.

17. Regarding claim 4, Yun further discloses wherein said searcher comprises a searcher buffer for storing Inphase and Quadrature (I/Q) samples (col. 37 line 15 – col. 38 line 54). Kang further discloses wherein said searcher comprises a searcher buffer for storing Inphase and Quadrature (I/Q) samples, and wherein said searcher is storing I/Q samples into said buffer (paragraphs 9, 10, 32). Ohno further discloses herein said

searcher is responsive to a trigger signal generated by said circuit (paragraphs 44 – 45, 54, figures 3, 7).

18. Regarding claim 5, Yun further discloses wherein said circuit operates to accumulate n symbol power samples, to scale the n accumulated symbol power samples, and to compare the scaled symbol power samples to a reference value (col. 27 line 19 – col. 28 line 14; where p is the power, c is doing the scaling and the target SINR is the reference value).

19. Regarding claim 8, Yun discloses l_0 as shown above. Yun does not disclose wherein the value is computed over numbers of samples that are less than the total size of a searcher sample buffer, and is used to select samples from only a portion of the searcher sample buffer for use by the searcher. However Kang further discloses wherein a value is computed over numbers of samples that are less than the total size of a searcher sample buffer, and is used to select samples from only a portion of the searcher sample buffer for use by the searcher (paragraphs 24, 38 – 40; where P and/or Q are less than M and where half slot is being interpreted as less than the total size of a searcher sample buffer).

20. Regarding claim 14, the steps claimed as method is nothing more than restating the function of the specific components of the apparatus as claim 8 above and therefore, it is rejected as in considering the aforementioned rejection for the apparatus claim 8.

21. Regarding claim 29, Yun discloses all limitations of claim 29 as analyzed in claim 8 above.

22. Regarding claim 33, the steps claimed as method is nothing more than restating the function of the specific components of the apparatus as claim 29 above and therefore, it is rejected as in considering the aforementioned rejection for the apparatus claim 29.

23. Regarding claim 15, Yun discloses a method for operating a code division, multiple access (CDMA) receiver, comprising: receiving a CDMA signal (figure 5, col. 1 lines 15 – 41, col. 2 lines 23 – 24); determining an instantaneous total received power (I_o) of the received CDMA signal over m consecutive segments of the received CDMA signal (col. 12 lines 42 – 48, col. 37 lines 39 – 45, col. 38 lines 1 – 51, col. 39 lines 50 – 60). Yun does not disclose storing samples of the received CDMA signal into a buffer and using a maximum value to identify one of m segments of the searcher buffer on which a searcher is to be enabled for operation.

In the same field of endeavor, however, Kang discloses storing samples of the received CDMA signal into a buffer (figure 4, paragraphs 24 – 25) and using a maximum value to identify one of m segments of the searcher buffer on which a searcher is to be enabled for operation (figure 4, paragraphs 13, 24, 25, 37, 39, 40; where Kang is not explicit about to identify one of m segments of the searcher buffer). Kang also shows an RF section for receiving a CDMA signal (paragraph 4) and a circuit for determining a total received power (I_o) of the received CDMA signal (figure 2 elements 32 – 34, paragraph 10). Also, Kang does not explicitly specify instantaneous however the total received power (I_o) would be the energy result of I^2+Q^2 .

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use storing samples of the received CDMA signal into a buffer and using a maximum value to identify one of m segments of the searcher buffer on which a searcher is to be enabled for operation as taught by Kang in the system of Yun to allow the system to perform efficiently and to avoid unnecessary operations (paragraph 13).

In the same field of endeavor, however, Ohno discloses to identify one of m segments of the searcher buffer (paragraphs 44 – 45, 54, figures 3, 7).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use to identify one of m segments of the searcher buffer as taught by Ohno in the system of Yun to reduce power consumption in a receiver (paragraph 15).

24. Regarding claim 16, Yun discloses a method for operating a code division, multiple access (CDMA) receiver, comprising: receiving a CDMA signal and determining an instantaneous total received power (I_o) of the received CDMA signal (figure 5, col. 1 lines 15 – 41, col. 2 lines 23 – 24, col. 12 lines 42 – 48, col. 37 lines 39 – 45, col. 38 lines 1 – 51, col. 39 lines 50 – 60). Yun does not disclose selectively one of generating or not generating a searcher trigger signal in accordance with the value of I_o , wherein when generated the searcher trigger signal causes a searcher to process the stored samples

In the same field of endeavor, however, Kang discloses storing samples of the received CDMA signal into a searcher buffer (figure 4, paragraphs 24 – 25) and

selectively causes a searcher to process the stored samples (figure 4, paragraphs 13, 24, 25 39, 40; where Kang is not explicit about to identify one of m segments of the searcher buffer). Kang also shows an RF section for receiving a CDMA signal (paragraph 4) and a circuit for determining a total received power (I_o) of the received CDMA signal (figure 2 elements 32 – 34, paragraph 10; where instantaneous is not explicitly specified however the total maximum received power (I_o) would be the energy result of I^2+Q^2).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use storing samples of the received CDMA signal into a searcher buffer and selectively causes a searcher to process the stored samples as taught by Kang in the system of Yun to allow the system to perform efficiently and to avoid unnecessary operations (paragraph 13).

In the same field of endeavor, however, Ohno discloses one of generating or not generating a searcher trigger signal in accordance with a value of I_o , wherein when generated the searcher trigger signal causes a searcher to process (paragraphs 44 – 45, 54, figures 3, 7).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use one of generating or not generating a searcher trigger signal in accordance with a value of I_o , wherein when generated the searcher trigger signal causes a searcher to process as taught by Ohno in the system of Yun to reduce power consumption in a receiver (paragraph 15).

25. Regarding claim 21, the function claimed as apparatus is nothing more than steps of the method as claim 16 above and therefore, it is rejected as in considering the aforementioned rejection for the method claim 16, wherein, Yun discloses all limitations of claim 21 as analyzed in claim 16 above.

26. Regarding claim 19, Yun further discloses wherein the searcher buffer stores Inphase and Quadrature (I/Q) samples (col. 37 line 15 – col. 38 line 54). Kang further discloses wherein the searcher buffer stores Inphase and Quadrature (I/Q) samples (paragraphs 9, 10, 32).

27. Regarding claim 24, the function claimed as apparatus is nothing more than steps of the method as claim 19 above and therefore, it is rejected as in considering the aforementioned rejection for the method claim 19.

28. Claims 2 – 3, 6, 10 – 12, 17 – 18, 22 – 23, 27 – 28, 31 – 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yun (US 6463295) in view of Kang et al. (US 2002/0181632) in view of Ohno (US 2001/0009562) in further view of Chung et al. (US 5642377).

29. Regarding claim 2, Yun discloses I_O as shown above. Yun does not disclose wherein said circuit comprises a comparator for comparing a value against a threshold, and for generating a searcher trigger signal only when I_O exceeds the threshold.

In the same field of endeavor, however, Chung discloses wherein said circuit comprises a comparator for comparing a value against a threshold, and for generating a searcher trigger signal only when a value exceeds the threshold (col. 2 lines 54 – 60, col. 4 lines 12 – 14, col. 5 lines 15 – 30, col. 7 lines 46 – 63).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use wherein said circuit comprises a comparator for comparing a value against a threshold, and for generating a searcher trigger signal only when a value exceeds the threshold as taught by Chung in the system of Yun to optimize detection and improve acquisition (col. 3 lines 42 – 57).

30. Regarding claim 10, the steps claimed as method is nothing more than restating the function of the specific components of the apparatus as claim 2 above and therefore, it is rejected as in considering the aforementioned rejection for the apparatus claim 2.

31. Regarding claim 17, Yun discloses all limitations of claim 17 as analyzed in claim 2 above.

32. Regarding claim 22, the steps claimed as method is nothing more than restating the function of the specific components of the apparatus as claim 22 above and therefore, it is rejected as in considering the aforementioned rejection for the apparatus claim 17.

33. Regarding claim 27, Yun discloses all limitations of claim 27 as analyzed in claim 2 above.

34. Regarding claim 31, the steps claimed as method is nothing more than restating the function of the specific components of the apparatus as claim 31 above and therefore, it is rejected as in considering the aforementioned rejection for the apparatus claim 2.

35. Regarding claim 3, Yun discloses I_o as shown above. Yun does not disclose wherein said circuit comprises a comparator for comparing a value against a threshold, and for generating a searcher trigger signal only when I_o exceeds the threshold.

In the same field of endeavor, however, Chung discloses wherein said circuit comprises a comparator for comparing a value against a threshold, and for generating a searcher trigger signal when I_o exceeds the threshold, or if a value does not exceed the threshold, for generating the searcher trigger signal within some predetermined period of time (col. 2 lines 54 – 60, col. 4 lines 12 – 14, col. 5 lines 15 – 30, col. 7 lines 46 – 63, col. 8 lines 46 – 56).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use wherein said circuit comprises a comparator for comparing a value against a threshold, and for generating a searcher trigger signal when I_o exceeds the threshold, or if a value does not exceed the threshold, for generating the searcher trigger signal within some predetermined period of time as taught by Chung in the system of Yun to optimize detection and improve acquisition (col. 3 lines 42 – 57).

36. Regarding claim 11, the steps claimed as method is nothing more than restating the function of the specific components of the apparatus as claim 3 above and therefore, it is rejected as in considering the aforementioned rejection for the apparatus claim 3.

37. Regarding claim 18, Yun discloses all limitations of claim 18 as analyzed in claim 3 above.

38. Regarding claim 23, the steps claimed as method is nothing more than restating the function of the specific components of the apparatus as claim 23 above and therefore, it is rejected as in considering the aforementioned rejection for the apparatus claim 18.

39. Regarding claim 12, Yun discloses all limitations of claim 12 as analyzed in claims 3 and 4 above.

40. Regarding claim 6, Yun discloses all limitations of claim 6 as analyzed in claim 12 above.

41. Regarding claim 28, Yun discloses I0 as shown above. Yun does not disclose where said enabling means is responsive to a value not exceeding the threshold within some predetermined period of time, for generating the searcher means trigger signal.

In the same field of endeavor, however, Chung discloses where said enabling means is responsive to a value not exceeding the threshold within some predetermined period of time, for generating the searcher means trigger signal (col. 2 lines 54 – 60, col. 4 lines 12 – 14, col. 5 lines 15 – 30, col. 7 lines 46 – 63, col. 8 lines 46 – 56).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use where said enabling means is responsive to a value not exceeding the threshold within some predetermined period of time, for generating the searcher means trigger signal as taught by Chung in the system of Yun to optimize detection and improve acquisition (col. 3 lines 42 – 57).

42. Regarding claim 32, the steps claimed as method is nothing more than restating the function of the specific components of the apparatus as claim 28 above and

therefore, it is rejected as in considering the aforementioned rejection for the apparatus claim 28.

Other prior art cited

The prior art made of record and not relies upon is considered pertinent to applicant's disclosure.

43. Nolan et al. (US 7013257) discloses a an RF section for receiving a CDMA signal and a circuit for determining an instantaneous total received power (I_o) of the received CDMA signal (figures 24, col. 1 lines 41 – 44, col. 9 lines 1 – 25, col. 12 lines 50 – 55, col. 13 lines 25 – 26)

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aslan Ettehadieh whose telephone number is (571) 272-8729. The examiner can normally be reached on Monday - Friday, 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Aslan Ettehadieh
Examiner
Art Unit 2611

AE

David C. Payne
DAVID C. PAYNE
PRIMARY PATENT EXAMINER